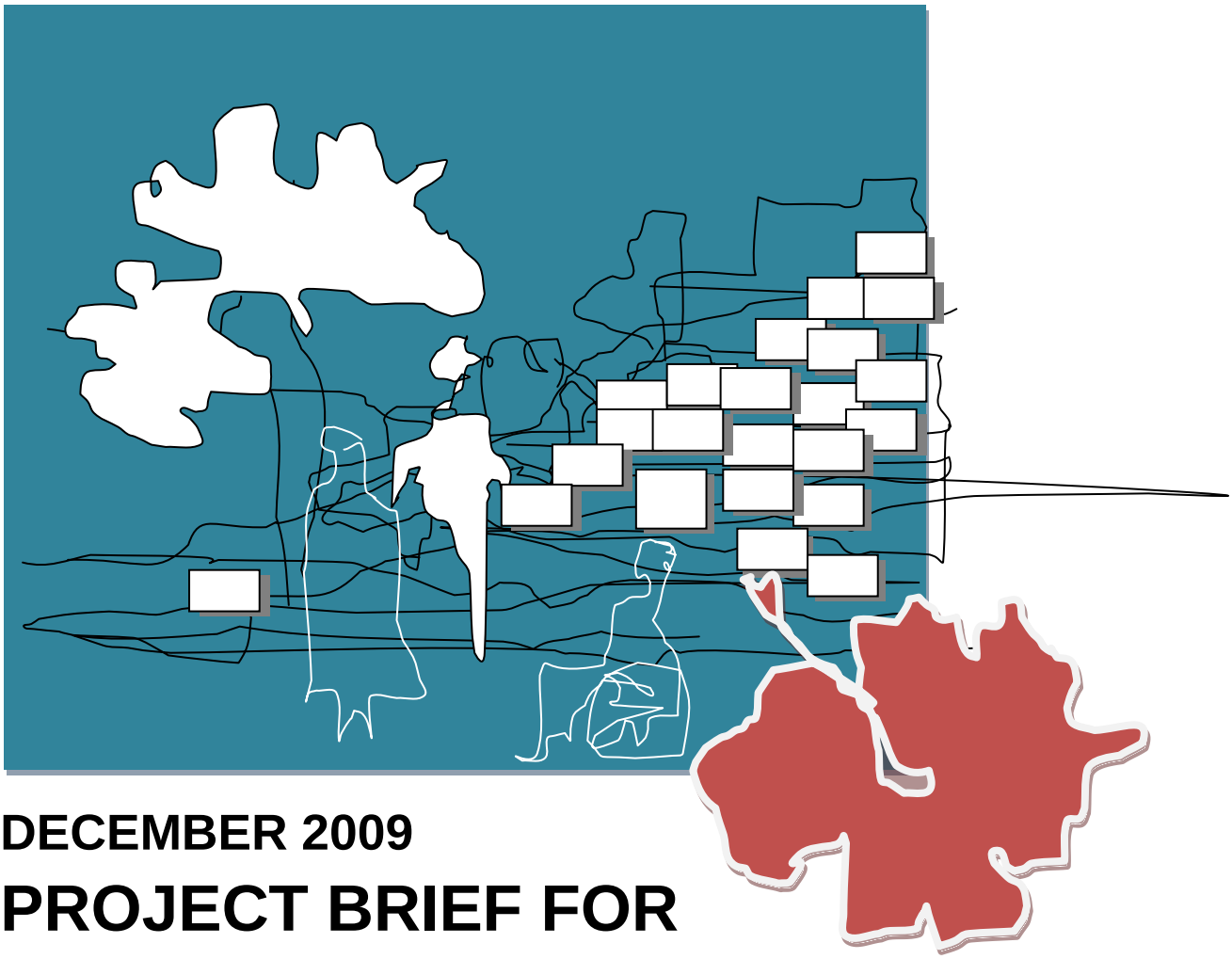
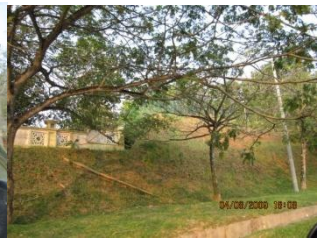


DECEMBER 2009

PROJECT BRIEF FOR IIUM HOSPITAL (PHASE 1), INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA (MEDICAL CAMPUS) KUANTAN, PAHANG DARUL MAKMUR



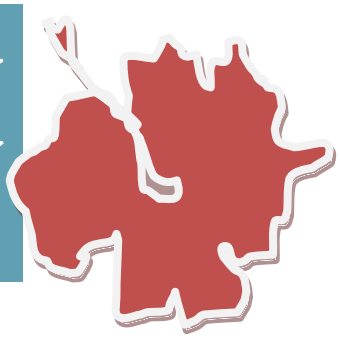






PROJECT BRIEF FOR IIUM HOSPITAL(PHASE 1), INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA (KUANTAN CAMPUS), KUANTAN, PAHANG DARUL MAKMUR

.....in the tradition of yhe Bimaristan Learning and Serving the Ummah thrugh revelation and reason.



December 2009.

Prepared by Kulliyyah of Medicine in collaboration with Kulliyyah of Architecture and Environmental Design, Allied Health and IIUM Development Division

PREAMBLE

It is a great pleasure to write a foreword in this important manuscript. A bit of history, IIUM was established on 1983 with the medical faculty or kulliyyah in Arabic, set up more than 10 years later initially in Petaling Jaya and later moved to the present site in Kuantan.

In the initial phase, in Petaling Jaya, the infrastructure was temporary and rudimentary but we have managed to build a solid human infrastructure both in students' teaching and staff development alike. When the whole Kulliyyah moved to Kuantan in 1996, a four storey building was erected on a former prison site, next to the state general hospital of Pahang called Hospital Tengku Ampuan Afzan (HTAA).

This existence was adequate for nearly 6 years until the Kulliyyah of Medicine building was completed in Bandar Indera Mahkota in a sprawling complex called Kuantan Campus or Medical Campus. This move came at the most opportune time as it coincided with the emergence of other health related kulliyyahs namely Pharmacy, Allied Health Science, Nursing and Dentistry. A bit later, Kulliyyah of Science came into the picture too.

This situation was sufficient and thus far we have managed to produce nearly 600 doctors through the use of various Ministry of Health's hospitals in Pahang namely Kuantan and Temerloh. The expansion of student number in both undergraduate and postgraduate puts another difficult challenge to surmount for the Kulliyyah. We have very little option but to spread our presence by using more and more public hospitals to accommodate our students.

This opportunity to build our own teaching hospital is the most significant step to complete the infrastructures for the development of a truly excellent medical kulliyyah. It is without doubt that a medical faculty must have in its possession a tertiary teaching hospital to develop the expertise and service through research and training. These acquisitions will serve as the template for excellent teaching and services to the

community. I am honored to be in this project as it will undoubtedly benefit the local community as well as the nation.

This manuscript contains the basic necessities of a medical teaching institution modeled using the infrastructures already in existence locally and our exposure to other institutions of repute internationally. It is my utmost wish that the government finds this manuscript acceptable for the project to proceed and lay the ground for further expansion of the kulliyyah and the university.

Thank You *Jazakallah khair*

Prof. Dr. Mohammed Fauzi Abdul Rani
Dean, Kulliyyah of Medicine
For International Islamic University Malaysia
Ramadhan, 1430H

Acknowledgement

Alhamdullillah, with the grace of *Allah Subhanawata'ala*, the documentation process to produce a comprehensive IIUM HOSPITAL brief of requirements within a short span of time, is finally completed. Due effort and support by IIUM Rector, Prof. Dato' Sri Dr. Syed Arabi Idid with Chairmanship from the Dean of the Kulliyyah of Medicine (KOM), Prof. Dr. Mohammed Fauzi Abdul Rani, and relentless cooperation and initiatives from various Kulliyyahs and individuals in the organizations (refer List below) has made the dream of IIUM, *insyaAllah,* a reality. May Allah bless our continuous strive for excellence here and the hereafter.

1st Ramadan 1430/ 21st August 2009

LIST OF NAMES AND DESIGNATION

KULLIYYAH OF MEDICINE

No	Name	Designation
1	Prof. Dr. Mohammed Fauzi Abdul Rani	Dean
2.	Prof. Dr. Nasser Muhammad Amjad	Deputy Dean Research & Postgraduate
3.	Asst. Prof. Dr. Azarisman Shah Bin Mohd Shah	Deputy Dean Academic Affairs
4.	Prof. Dr. Nasuruddin Abdullah	Deputy Dean Student Affairs
5.	Assoc. Prof. Dr. Ahmad Hafiz Zulkifly	Director of CCC/ Dept of Orthopaedic
6.	Assoc. Prof. Dr. Ahmad Murad Zainuddin	Director of FC/ Dept of O & G
7.	Prof. Dato' Dr. Humairah Bt Abdul Samad	Director of Breast Center/ Dept of Radiology
8.	Prof. Dr. Mokhtar Bin Awang	Head, Department of O & G
4.	Asst. Prof. Dr. Mohd Azman Bin Md Aris	Head, Department of Community Health & Family Medicine
9.	Asst.Prof. Dr. Mohamed Azril Mohamed Amin	Head, Department of Orthopaedics, Traumatology & Rehabilitation
10.	Prof. Dr. Pakeer Oothuman Sayed Ahamed	Head, Department of Basic Medical Science
11.	Prof. Dr. Ariff Osman	Head, Department of

		Anaesthesiology
12.	Prof. Dr. Azmi Md Nor	Head, Department of Surgery
13.	Asst Prof. Dr. Ahmad Marzuki Omar	Head, Department of Internal Medicine
14.	Asst. Prof. Dr. Nora Mat Zin	Head, Department of Psychiatry
15.	Assoc. Prof. Dr. Wan Ishlah Leman	Head, Department of Orl-Hns
16.	Prof. Dr. Abdul Wahab Jantan	Head, Department of Paediatrics
17.	Assoc. Prof. Dr. Jamaluddin Ab Rahman	Dept of Community Health & Family Medicine
18.	Assoc. Prof. Dr. Aminudin Che Ahmad	Dept. of Orthopaedics
19.	Asst. Prof. Dr Zamzila Abdullah	Dept. of Basic Medical Science
20.	Asst. Dr. Norlelawati A. Talib	Dept. of Basic Medical Science
21.	Assoc. Prof. Dr. Ahmad Razali Md Ralib	Dept. of Radiology
22.	Asst. Prof. Dr Adzura Salam	Dept. of Opthalmology

KULLIYYAH OF PHARMACY

1.	**Prof. Dato' Dr. Tariq Abd Rahman**	**Dean**
2.	Assoc. Prof. Dr. Mohamad Haniki Bin Nik Mohamed	Head, Department of Pharmacy Practice
3.	Siti Halimah Bux Shaikh Rahman Bux	Sen. Academic Fellow

KULLIYYAH OF NURSING

1.	**Prof. Dr. Kamaruzaman Wan Su**	**Dean**

KULLIYYAH OF ALLIED HEALTH SCIENCE

1.	**Assoc. Prof. Dr.Nik Mazlan Nik Mamat**	**Dean**
2.	Mdm Narimah Daud	Deputy Dean Academic Affairs

KULLIYYAH OF DENTISTRY

1. Dr. Noraini Abu Bakar	

KULLIYYAH OF ARCHITECTURE AND ENVIRONMENTAL DESIGN

1	**Prof. Dr. Mansor Ibrahim**	**Dean**
2.	Assoc. Prof. Datin Ar. Norwina Bt Mohd Nawawi	Head, Dept of Architecture (Health Facility Architecture and Planning)
3.	Asst. Prof. Ar. Dr. Abdul Razak Sapian	Dept. of Architecture (Green/Sustainable Architecture)

IIUM DEVELOPMENT DIVISION

1.	**Ir. Shaffie Bin Mohamad**	**Director (C & S ENGINEER)**
2.	Azrul Hisyam	

Secretarial Assistance from Kulliyyah of Medicine	
Zuraida Hassan	Deputy Director
Nor Haliza Shamsuddin	Assistant Administration Officer (IIUM Hospital Project)

TABLE OF CONTENT

CHAPTER 1
INTRODUCTION

1.0 INTRODUCTION

1.1 Introduction

Malaysia is rapidly changing. The nation is moving in the direction of a developed nation status by year 2020. This entails a vast change among others in terms of services and infrastructure. The nation will offer more as the people will expect more as the standard that prevails will be higher.

The successful implementation of these changes will rest on the availability of sustainable human capital, application and discoveries of new technologies and knowledge based management system to produce quality products and services to meet the demand and challenges of the new millennium.

The healthcare sector demands high quality patient care services in a continuously changing environment. This is challenged by the new customers' expectation, emergence of new risk factors, charges in medical technology and application of new information technology.

The delivery of healthcare services and medical education are two symbiotic elements that are critical in the healthcare life cycle. This will directly contribute to the final goals of quality patient care. Equally, there are other important supporting elements that will contribute to the holistic success of the healthcare system.

International Islamic University Malaysia (IIUM), a premiere institution of higher learning, has embarked on the teaching of medicine through the formation of a Kulliyyah of Medicine in 2002.

The IIUM Kulliyyah of Medicine envisions being the esteemed centre producing highly motivated and accomplished doctors practicing holistic medicine that will enable them to lead the medical profession and to influence the medical practice worldwide.

The long term strategic plan of IIUM Kulliyyah of Medicine is to establish its own teaching hospital with Islam as its foundation. IIUM Hospital will promotes Islam as *The Way of Life* and creation of a society imbued with Islamic values through peace, moderation, just, compassion, quest for knowledge, sustainable economy and in harmony with the environment.

As a new initiative for Malaysia through its location in the east coast region of the peninsula, IIUM Hospital integrates well with the ECER development initiative to be part of the future platform for the national healthcare referral network especially for the people in the east coast. The IIUM Hospital will also contribute to sustainable employment opportunities for a wide array of medical and related professions in a conducive environment to strive for excellence.

As an international medical centre, IIUM Hospital will provide a platform for both local and international professionals the appropriate environment to excel in research and innovation. In its pursuance for excellence in the region and worldwide, its location in Kuantan augurs well for healthcare tourism.

1.2 Project Description

1.2.1 The Site & Catchment Population

The IIUM Hospital Project involves its development on a 15 acres designated site, fronting the Persiaran Sultan Abu Bakar, within the existing IIUM Kuantan Campus, near Bandar Indera Mahkota in Kuantan, Pahang (refer Fig.1:1 The Proposed IIUM Hospital Site).

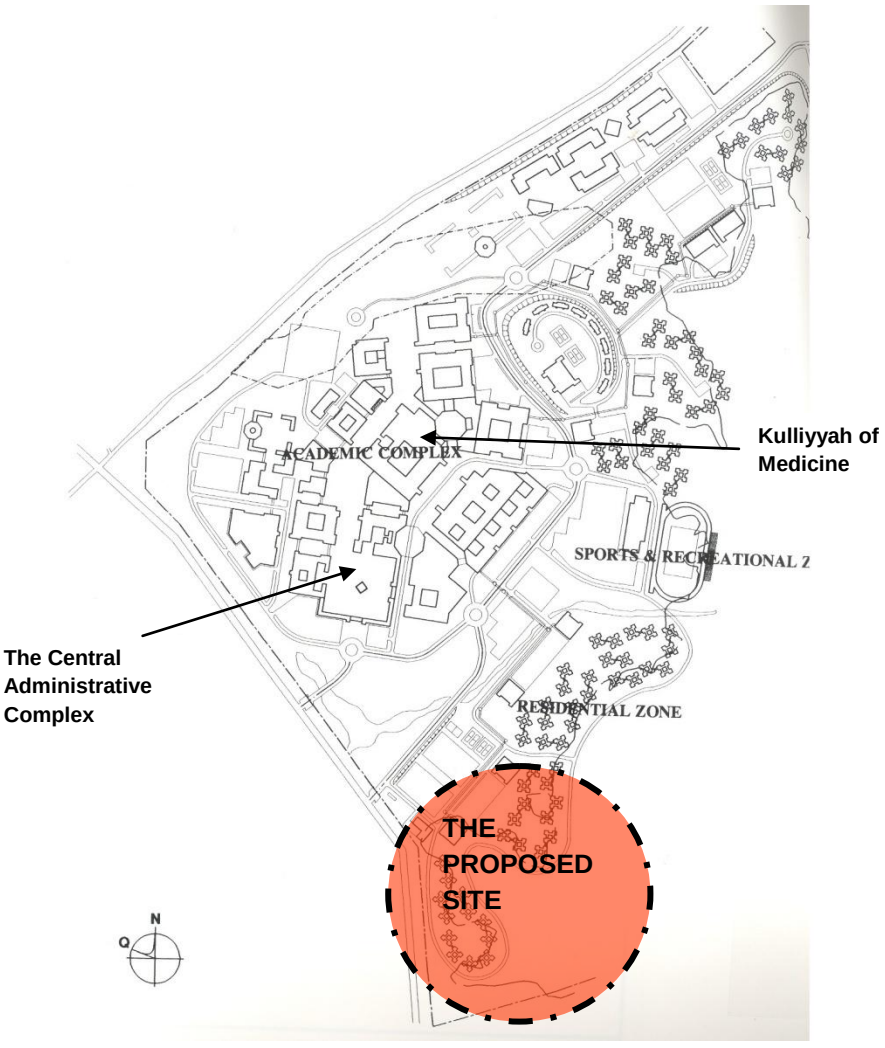


Fig.1:1 The Proposed IIUM Hospital Site

The site for the proposed hospital is located adjacent to the new IIUM Mosque and students' residential area in IIUM Kuantan Campus with its own public and service access. The hospital, apart from teaching and

research, will serve the catchment population of Kuantan, the ECER and the nation in complimentary to the Ministry of Health Malaysia's healthcare services and facilities.

1.2.2 The Specialty Area

The proposed teaching hospital of **800 beds** hospital will comprise of the following dedicated specialties :

Specialties

1. Internal Medicine,
2. Surgery,
3. Oncology and Radiotherapy,
4. Obstetrics and Gynecology,
5. Peadiatric and Peadiatric Intensive Care,
6. Dental and Maxillofacial Surgery,
7. Ophthalmology,
8. Otorhinolaryngology & Head and Neck Surgery,
9. Orthopaedics,Traumatology & Rehabilitation,
10. Anesthesiology and Intensive Care,
11. Emergency Medicine,
12. Family Medicine,
13. Psychiatry
14. Radiology,
15. Pathology,
16. Forensic Medicine,

Medical Support Services:

1. Dietetics
2. Rehabilitation
3. Pharmacy
4. Medical Social Worker and Counseling
5. Patient Education
6. Central Sterile Supply Department (CSSD)
7. Rehabilitation Department
8. Respiratory and Haemodynamic Unit

9. Hospital Medical Store
10. Logistic & Ambulance Services

However, for the **first phase of development, 300 beds** will be initially be provided for the following specialties in parts:

Specialties

1. Internal Medicine,
2. Surgery,
3. Oncology and Radiotherapy
4. Obstetrics and Gynecology,
5. Peadiatric and Peadiatric Intensive Care
6. Dental and Maxillofacial Surgery,
7. Ophthalmology,
8. Otorhinolaryngology & Head and Neck Surgery,
9. Orthopaedics, Traumatology & Rehabilitation,
10. Anesthesiology and Intensive Care,
11. Emergency Medicine
12., Family Medicine,
13. Psychiatry
14. Radiology,
15. Pathology,
16. Forensic Medicine,

Medical Support Services:

17. Dietetics
18. Rehabilitation

19. Pharmacy
20. Medical Social Worker and Counseling
21. Patient Education
22. Central Sterile Supply Department (CSSD)
23. Respiratory and Haemodynamic Unit
24. Hospital Medical Store
25 Logistic & Ambulance Services

Future phases will follow IIUM Strategic planning on enhancement of the services complementing the needs of the nation and the ummah.

1.2.3 Teaching, Learning, Research and Continuing Medical Education Agenda

The IIUM Hospital envision to encompass a wide range of outpatient services, laboratory and research activities as part of IIUM existing strategic and development programmes. The IIUM Hospital is expected to be utilized by more than 1000 students from Kulliyyah of Medicine, Nursing, Pharmacy, Allied Health Science, Science and Dentistry at any one time when all the phases are fully completed.

The IIUM Hospital is expected to target not only local under-graduates and postgraduates but also international students through vast IIUM network in the Middle East, OIC countries and other continents of the world. The current intake for both undergraduates and postgraduates is around 750 per year and is expected to increase to a maximum of 2000 per year. It is also expected that IIUM Hospital would attract foreign visitors to tap into the expanding market of health tourism.

1.3 STATUS OF IIUM MEDICAL SCHOOL

The International Islamic University Malaysia or IIUM is a global endeavour on education, training and research. IIUM was established in 1983 to spearhead the work to galvanize the Muslim Ummah through education and other strategic activities. After 25 years in the path of education, training and research and IIUM can be proud of many achievements.

IIUM has a total number of 20,000 students from nearly 90 countries and the number is increasing. Of this, nearly 20% are from the largely untapped foreign countries namely the OIC countries. This is quite beyond the reach of other universities in Malaysia. The networking with the all the Muslim countries around the globe is second to none.

To date, IIUM has 14 faculties or kulliyyahs. The Kulliyyah of Medicine is located in Kuantan, the whole university complex is called Kuantan Campus or Medical Campus. There are five (5) other kulliyyahs in Kuantan Campus and they are pharmacy, dentistry, allied health science, nursing and science. Each kulliyyah is expanding in both undergraduate and postgraduate activities with increasing student enrolment, increasing programmes and staff intake.

The Kulliyyah of Medicine is the 5th accredited public medical school in Malaysia and to date has produced 7 batches of doctors, specifically 553 doctors (refer Table 1: 1). There are 120 highly qualified full time academic staff and this number is steadily rising.

	Programme									
	Undergraduates	2007	2008	2009	2010	2011	2012	2013	2014	2015
1 MBBS										
	Intake	120	120	135	135	140	140	145	150	160
	Year 2	115	120	120	135	135	140	140	145	150
	Year 3	114	115	120	120	135	135	140	140	145
	Year 4	101	114	115	120	120	135	135	140	140
	Year 5	90	101	114	115	120	120	135	135	140
	Output	90	90	101	114	115	120	120	135	135
	Total Population	**540**	**570**	**604**	**625**	**650**	**670**	**695**	**710**	**735**
	Total Intake	**120**	**120**	**135**	**135**	**140**	**140**	**145**	**150**	**160**
	Total Enrolled	**420**	**450**	**469**	**490**	**510**	**530**	**550**	**560**	**575**
	Total Output	**90**	**90**	**101**	**114**	**115**	**120**	**120**	**135**	**135**
	Total	**540**	**570**	**604**	**625**	**650**	**670**	**695**	**710**	**735**

Table 1: 1 Projected and existing MBBS student intake and undergraduates from 2007-2015 *(source: IIUM Kulliyyah of Medicine (2009))*

The undergraduate medical course is currently undertaken at a few sites, i.e. the Kuantan Campus, Hospital Tengku Ampuan Afzan (HTAA), Hospital Sultan Haji Ahmad Shah and Hospital Pekan. These hospitals are located in Pahang. These hospitals are used for teaching during the clinical phase of the course. The use of the hospital is sealed by the

Memorandum of Understanding (MOU) signed with the Ministry of Health Malaysia (MOH) in 1997 to cater for the needs of undergraduate as well as postgraduate teaching in the future.

1.4 NEED STATEMENT of IIUM

Kulliyyah of Medicine (KOM) of IIUM is expanding. At present the intake per year is just under 140 students. If the number includes the intakes from the Kulliyyahs of Nursing, Dentistry, Pharmacy and Allied Health then the current usage of the MOH hospitals in Pahang will be insufficient. The need for its own teaching hospital for purposes of teaching and learning, services and research is therefore overwhelming.

Kulliyyah of Medicine has over 120 full time highly qualified academic staff. They are recognized as specialists and sub-specialists in many clinical specialties nationally. Many sit in conjoint boards or specialty boards and in the very near future this will further be expanded and enhanced with increase in both the number and types of expertise. The current infrastructure in terms of hospitals and healthcare facilities are inadequate to support this expansion and therefore there is an urgent need for a hospital for the kulliyyah for which IIUM Hospital is envisaged to fill in the gap.

Kulliyyah of Medicine has now expanded into postgraduate activities. These are Master and PhD programmes in basic medical sciences and also in clinical postgraduate programmes supervised by the various conjoint boards of each specialty. The basic requirements for clinical postgraduate programmes are the existence of adequate infrastructure of sufficiently high standard and the clinical expertise that will run the course. The latter demands the existence of sufficient number of experienced clinicians to supervise the students during the training. The provision of the necessary infrastructure and the need for expansion of the teaching staff require the kulliyyah to acquire its own teaching hospital and therefore IIUM Hospital will be a necessity to bridge this gap.

Kulliyyah of Medicine is located in Pahang with a population of nearly 1.4 million people and this is expected to reach 2 million by the year 2020. The neighbouring state of Terengganu will expand her population to 1 million by the same year, making a catchment population of at least 3 million by 2020. This region houses a huge existence of expatriates and local professionals in the petrochemical and automotive industries and this represents a specific need for medical expertise. There is an urgent and crucial need for a tertiary teaching hospital to serve this vast area with the various needs of the population. IIUM Hospital will serve this need and ensure a high quality medical care for this region with the creation of clinical center of excellence. This will be in line with the national plan to develop ECER and SEZ within the Pahang and southern Terengganu region.

Kulliyyah of Medicine uses Hospital Tuanku Ampuan Afzan (HTAA) in Pahang as the main teaching hospital. The total number of beds in the nine government hospitals in the state is 1585, 8 private hospitals with 143 beds and 1 estate hospital with 10 beds. The bed to population ratio for Pahang is 1:773, with the ratio in Terengganu at 1:837. For comparison, the ratio in Klang Valley is 1:232, Penang 1:349, Johor 1:473 and the national average is 1:496. The WHO recommended average is 1:400 and clearly there is a need to increase the number of beds for the people in this region. IIUM Hospital will address this shortage.

Kulliyyah of Medicine in Kuantan uses HTAA as the main teaching hospital for the university. HTAA is a service hospital with basic teaching facilities. HTAA is also used by other kulliyyahs as well as by local private learning institutions to accommodate nursing, allied health science and pharmacy students. The hospital, HTAA, is presently congested and not able to cope with IIUM‘s demand and therefore the construction of an IIUM Hospital is timely indeed.

CHAPTER 2

THE IIUM HOSPITAL PROJECT SCOPE

2.0 IIUM TEACHING HOSPITAL PROJECT SCOPE

2.1 Project Concept and Components

The IIUM Teaching Hospital (The Hospital) involves the development of a undergraduate and postgraduate teaching hospital and tertiary referral centre, complimenting the medical and allied health faculty provisions, on a piece of land measuring approximately **25- 40 acres** located within the IIUM Kuantan Campus, Kuantan, Pahang adjacent to Bandar Indera Mahkota township. The Project involves the design and build of a **300 beds** (in phase 1) to 800 beds (future) to hospital comprising of the following areas:

FOR PHASE 1

2.1.1 The Hospital Broad Component

1. Outpatient Specialist Clinics
2. Ambulatory Care Centre (ACC)
3. Diagnostic and Treatment
4. Inpatient Areas (including VVIP Wing)
5. Medical Support
6. Non Medical Support
7. Training, Research & Educational Facilities
8. Administration
9. Staff and Students' Facilities
10. Public Amenities& Recreation

FUTURE PHASE will include

1. Primary Healthcare Centre (Annex)-outpatient, maternal and child health, home nursing, others (MoH-KK2 equivalent),
2. Outpatient Specialist Clinics (including IIUM Staff & student Clinic & Private Clinic)
3. Diagnostic and Treatment (expansion of services)
4. Inpatient Areas (including Private Wing & Royal Suite)
5. Training, Research & Educational Facilities (added teaching,

learning and research facilities)

6. Administration (management/workload)
7. Public Amenities& Recreation (enhancement)

2.1.2 The Hospital Services

Specialties:

1. Internal Medicine,
2. Surgery,
3. Oncology and Radiotherapy,
4. Obstetrics and Gynecology,
5. Peadiatric and Peadiatric Intensive Care,
6. Dental and Maxillofacial Surgery,
7. Ophthalmology,
8. Otorhinolaryngology & Head and Neck Surgery,
9. Orthopaedics, Traumatology & Rehabilitation,
10. Anaesthesiology and Intensive Care,
11. Emergency Medicine,
12. Family Medicine,
13. Psychiatry
14. Radiology,
15. Pathology,
16. Forensic Medicine,

FUTURE SPECIALISATION

Gerontology

Palliative

Others

Medical Support Services:

1. Dietetics
2. Rehabilitation
3. Pharmacy
4. Medical Social Worker and Counseling
5. Patient Education
6. Central Sterile Supply Department (CSSD)
7. Rehabilitation Department
8. Respiratory and Haemodynamic Unit
9. Hospital Medical Store
10. Logistic & Ambulance Services

2.1.3 Hospital Physical Components

FOR PHASE 1

2.1.3.1 Outpatient Services

- Emergency Department
- Outpatient Specialist Clinics
- Ambulatory Care Centre (Medical & Surgical Daycare, Endoscopy, Day Oncology Services, satellite pharmacy)

FUTURE PHASE

- *Outpatient Specialist Clinics (including Private Specialist Clinics)*
- *Ambulatory Care Centre (Haemodialysis Unit and other expansion)*
- *Primary Health Care Clinic (Annex)*

FOR PHASE 1

2.1.3.2 The Inpatient Services

- Inpatient Wards (Including VVIP Wing)
- Intensive Care Unit (ICU)
- Cardiac Care Unit (CCU)
- Coronary Intensive Care Unit (CICU)
- Neuro Intensive Care (Neuro ICU)

- Neonatology ICU (NICU)

FUTURE PHASE

- *Inpatient Wards (Including private, and Royal suite)*
- *Intensive Care Unit (expansion by specialty)*
- *Cardiac Care Unit (expansion) (CCU)*
- *Paediatric Intensive Care Unit (PICU)*
- *Neonatal Intensive Care Unit (expansion) (NICU)*
- *Coronary Intensive Care Unit (expansion) (CICU)*
- *Burns Unit (BU)*

FOR PHASE 1

2.1.3.3 Diagnostic and Treatment Services

- Operation Theatre Complex
- Labour & Delivery Unit
- Radiology Department
- Pathology Department
- Mortuary &Forensic Services

FUTURE PHASE

- *Operation Theatre Complex (expansion (burn)*
- *Labour & Delivery Unit (expansion)*
- *Nuclear Medicine Unit*
- *Radiation Treatment Unit*
- *Radiology Department (expansion)*
- *Pathology Department (expansion)*
- *Mortuary &Forensic Services (improvement)*

FOR PHASE 1

2.1.3.4 Medical Supports Services

- Pharmacy Department
- Medical Social Worker and Counseling Services

Unit

- Central Sterile Supply Department (CSSD)
- Rehabilitation Department (Part of ACC)
- Respiratory and Haemodynamic Unit
- Hospital Medical Store
- Logistic & Ambulance Services

FUTURE PHASE

- Pharmacy Department (expansion)
- Central Sterile Supply Department (CSSD)
- Rehabilitation Department (expansion to include hydrotherapy pool) (Part of ACC)

FOR PHASE 1

2.1.3.5 The Non Medical Support Services

- Catering Department
- Linen Holding Unit
- Bio Medical and Engineering Services
- Cleaning and Housekeeping Services
- Waste Management (including Medical/Clinical waste)
- Security and Safety Services
- Maintenance

FUTURE PHASE

Storage, loading and service area expansion

FOR PHASE 1

2.1.3.6 Training, Research & Educational Facilities

- Clinical Examination Centre

- Continuous Medical Education Training Centre
- Clinical Research Centre
- Health Education Unit
- Decentralised teaching & learning/Students' station

FUTURE PHASE

- *added facilities and enhancement to existing services/facilities based on new teaching techniques and research*

FOR PHASE 1

2.1.3.7 Administrative Offices

- General Administration Department
- Academic Office
- Admission and Revenue Unit
- Registration & Medical Records Department
- Information Technology and Hospital Information Services
- Facility Management Office

FUTURE PHASE

enhancement to delivery of services

FOR PHASE 1

2.1.3.8 Staff and Students' Facilities

- Housemen Complex
- Doctors on Call facilities
- Nurses' Hostels
- Recreational Centre
- Creche /Nursery

FUTURE PHASE

- *Housemen Complex (expansion)*
- *Doctors on Call facilities (expansion)*
- *Nurses' Hostels (expansion)*
- *Clinical Specialist Complex (Including visiting professors accommodation)*
- *Essential Staff Housing*
- *Recreational Centre*
- *Creche /Nursery (expansion)*

FOR PHASE 1

2.1.3.9 Public Amenities *(as ibadah friendly hospital)*

- Main Entrances and Hospital Street (including Retail, Post, Banks)
- Cafeteria (Staff, student and public)
- Visitors' Residence (Relatives)
- Spiritual/Meditation Facilities
- Discharge Lounge
- Public, staff and students parking area
- Public transport enclosure
- Play ground, therapeutic and restorative gardens

FUTURE PHASE

- *Main Entrances and Hospital Street (enhancement)*
- *Patient Hotel*
- *Multilevel parking area*
- *Public transport (enhancement)*
- *Play ground, therapeutic and restorative gardens (addition)*

2.1.4 Teaching, Learning, Research and Continuing Medical Education Needs.

As a teaching hospital, the facility is also envisioned to encompass a wide range of outpatient services encapsulate as part of ambulatory care services; laboratory and research activities as part of IIUM existing development programmes and efforts that still need to be pursued and expanded in the proposed scope of the Project for its short and long term strategic plan.

The Hospital is proposed to consist of facilities that will accommodate needs of post graduates and undergraduates students from local and international students in lieu of IIUM's vast network in the Middle East, OIC countries and other various continents of the world. The Hospital also aimed at aiding in the training of students to a higher degree of specialization continuing its holistic approach imbued with Islamic values that will be sustainable and in harmony with the environment.

2.1.5 Broad Site Component

The project PFI component as shown in Table 2:1 Table of Main Project Components and site acreage provision.

	Schedule of Main Project Components	Acreage
1	IIUM Hospital	20
2	Staff Accommodation	5
	Total	**25**

Table 2:1 Main Project Components and Site Acreage Provision

(The acreage provided above is an estimate and subject to possible appropriate changes based on the detailed and final design taking into account the natural terrain, conservation of natural vegetation as much as possible and good management of the site pre and post construction, while providing the necessary access in the management of the hospital)

2.2 Project Location

The proposed Hospital location, with an area of over 25 acres, is sited within the IIUM Kuantan Campus, fronting Persiaran Sultan Abu Bakar, adjacent to Bandar Indera Mahkota new township and the proposed bus terminal on the new town. The site was selected, among others, based on the following factors:

1) It is conveniently located within the IIUM Kuantan Campus grounds adjacent to the IIUM new mosque with easy public access and egress next to the main trunk road i.e. Persiaran Sultan Abu Bakar.

2) It is near the Bandar Indera Mahkota exit of the East Coast Highway. The campus itself is located along a major trunk road and at an intersection servicing traffic between Kuala Lumpur – Kuantan – Kuala Terengganu.

3) It is strategically located within Bandar Indera Mahkota, a mixed administrative and mixed density housing area located just 5 km west of the Kuantan town.

4) The location is also very near to Sultan Ahmad Shah Airport which lies along the main trunk road leading from Kuala Lumpur to Kemaman / Kuala Terengganu.

Fig. 2.2 Location Plan

2.3 Core Activities of IIUM Hospital

The core services offered by the IIUM Hospital are:

- Healthcare services specializing on specialties and subspecialties will be provided with 800 beds where **300 bed Medical Centre will be provided in Phase 1. Phase 1 will include** Outpatient Specialist Clinics, Ambulatory Care Centre, Inpatient Facilities, Critical Care, Diagnostic and Treatment, Medical and Non Medical Support Services, Training and Education Facilities; *(refer 2.1 and 2.2 for full scope of the project)*

- Internal Medicine, Surgery, Oncology and Radiotherapy, Obstetrics and Gynaecology, Paediatrics, Dental and Maxillofacial Surgery, Ophthalmology (Optometry), Otorhino laryngology (ENT), Orthopaedics & Traumatology, Anaesthesiology and Intensive Care, Accident and Emergency, Psychiatry, Pathology, Radiology, Pharmacy;

- Medical Support Services (Allied Health Sciences, Welfare, Records, Dietetics, Laundry, Sanitary, Medical Waste);

- Dedicated Clinical Examination Centre for the undergraduate and postgraduate student utilization;

2.4 The Required Project Layout

The proposed layout should be able to accommodate the various multi-faceted requirements of user-patients, user-staff, user-students,user-public, clinical procedures and policies, teaching and examination operational policies, medical and non medical support regimes, engineering and maintenance routines as well as **future expansion** apart from the regulatory and environmental requirements for health, safety, well-being and sustainability.

The layout should consider the site context inter and intra the proposed site for ease of access by general public, emergency vehicle, staff and

student of IIUM (from faculties and accommodation) and the Friday prayers at IIUM Mosque (staff, student, public and patient).

The proposed physical project layout should be clearly zoned and defined for ease of management broadly as follows:

User Circulations (vertical and horizontal) in terms of adjancency, distance, security, safety, privacy, urgency, convenience.

Students' circulation (medical, nursing, allied health)

Various Staffs' circulation

Outpatient circulation

Inpatient circulation

Emergency entry

Infectious disease

Disaster management

VVIP patient/Royal patient

Cadaver circulation

Visitors/Relatives circulation

Staff, patient and accompanying relative circulation

Information distribution

Maintenance circulation

Test (blood,urine, specimen) circulation (manual or automation)

Radiology/Imaging services circulation

Supply and Distribution Circulation (food, pharmacy, linen)

Waste Collection Circulation

Systems Identification and Infrastructure

Automated transportatiton (eg. Pneumatic tube, etc) system type, distribution and stations

Medical gas supply distribution

ICT server hub, distribution and stations

(Refer 3.0 Master Plan Brief for detail requirements.)

2.5 Summary of Areas

Proposed Schedule of Accommodation/Areas for the IIUM Teaching Hospital is shown in Tables 2.0 and 3.0 respectively.

CHAPTER 3

MASTERPLAN BRIEF

3.0 MASTER PLAN BRIEF OF IIUM HOSPITAL

3.1 INTRODUCTION

The Project Proponent is expected to produce a Development Control Plan or Master Plan of the hospital within the constraint of the site in the form of a comprehensive articulated physical facility that will address the current and future service needs of a teaching hospital for the next 10-15 years.

3.1.1 The Master Plan Aim / Goal

The aim/goal of the master plan is to develop a SUSTAINABALE hospital that responds to the users' functional, clinical, socio-cultural, spiritual, environmental and other needs and demands that is able to reflect IIUM's mission based on REVELATION & REASON towards comprehensive excellence.

3.1.2 The Master Plan Objectives

The objectives of the master plan are to be able:-

1. To provide a programmed development plan or a Development Control Plan for the hospital in terms of its physical requirements attune to Islamic principles of respecting the environment;

2. To determine an overall plan in conceptual form for the proposed location and its relationship to the various relevant supporting facilities, existing facilities and context;

3. To determine the capability and flexibility of the option for the facility to undertake unprecedented changes in line with technology, social, cultural, and other needs;

4. To determine priority of needs of users - i.e. patient, staff,

students, workers, visitors as well as systems in the constant conflicting constraints, as determined by the *Shariah*;

5. To determine security and safety of the hospital, its inhabitants, its circulations, process, procedures, system, data and other relevant variable for the operation of the hospital, physically, electronically (where appropriate) and psychologically;

6. To determine extend of provision for disaster management measures

7. To have the ability to determine and quantify the COST of the development in their different zones, stages and phases ; and

8. To be able to submit to the Local Authority, the IIUM Hospital Development Plan for 2012 - 2027 as part of Development Order submission.

3.2 THE SITE & CATCHMENT AREA

3.2.1 The Location Plan

The IIUM Hospital development is geographically sited within the existing IIUM Kuantan Campus/ IIUM Medical campus, Kuantan District and the State of Pahang. It will serve as the teaching and research and service hospital with primary, secondary and tertiary care services for the immediate catchment area, the ECER , national, and international catchment (refer Fig. 3:1 The Location Plan)

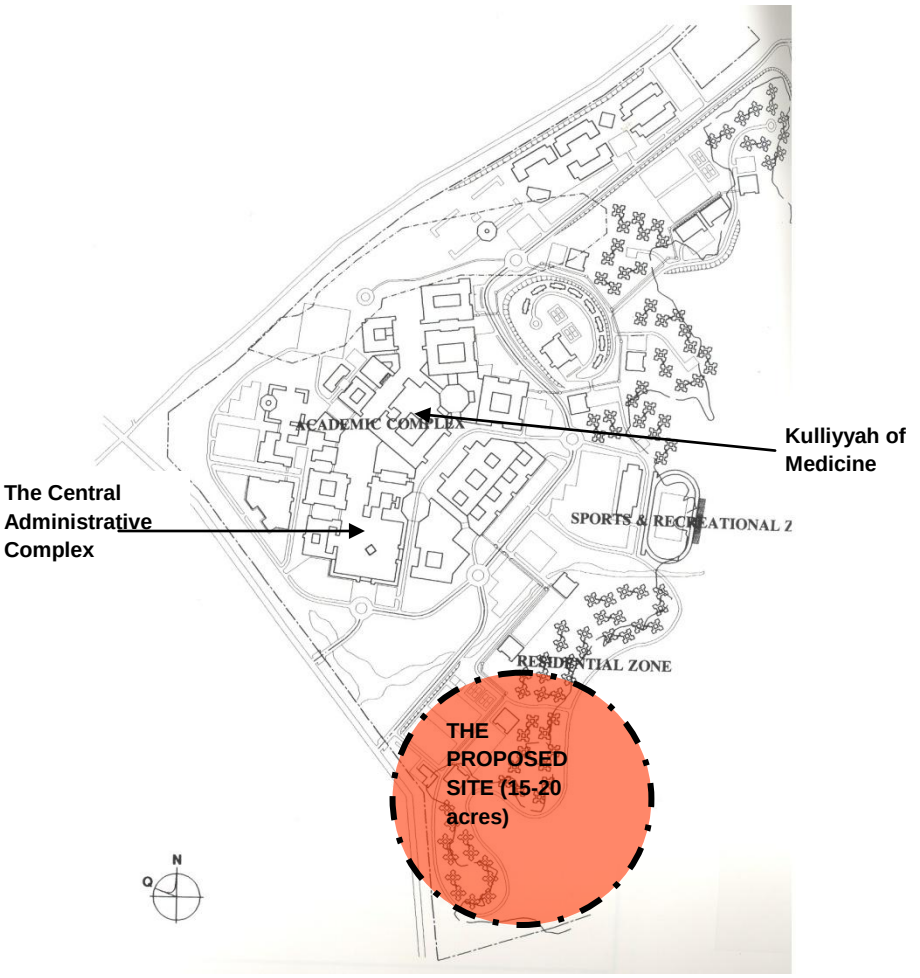
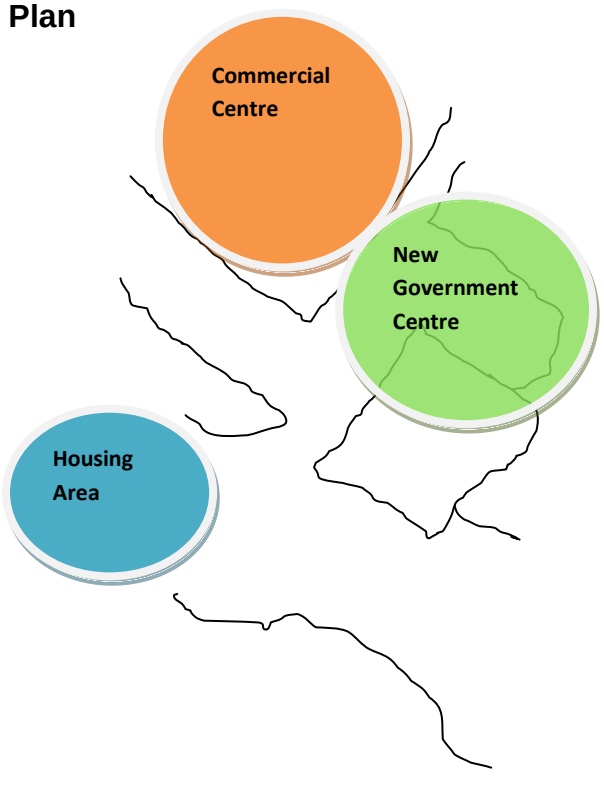


Fig. 3:1 The Location Plan in IIUM Kuantan Campus Masterplan

3.2.2 The Lot Plan



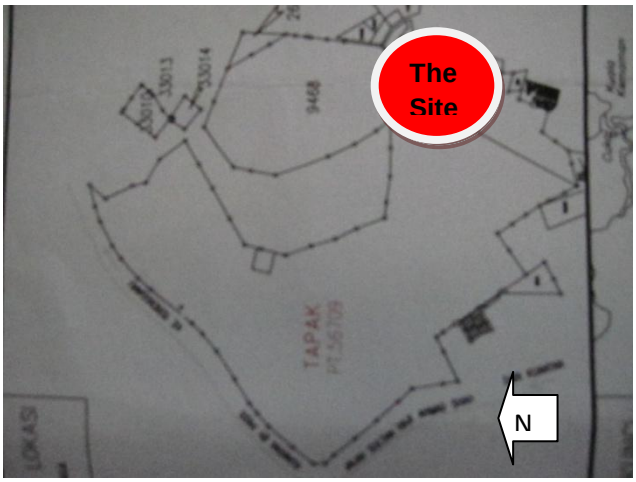


Fig. 3:2 The Lot Plan (PT 56709) for IIUM Kuantan Campus

The site is flanked by the IIUM mosque on the South West and the housing area on the North East. The hills and forest on the North West and Indera Mahkota new city development on the South East.

3.2.3 The Topography Plan

Fig. 3:3 The Topography Plan of the Site

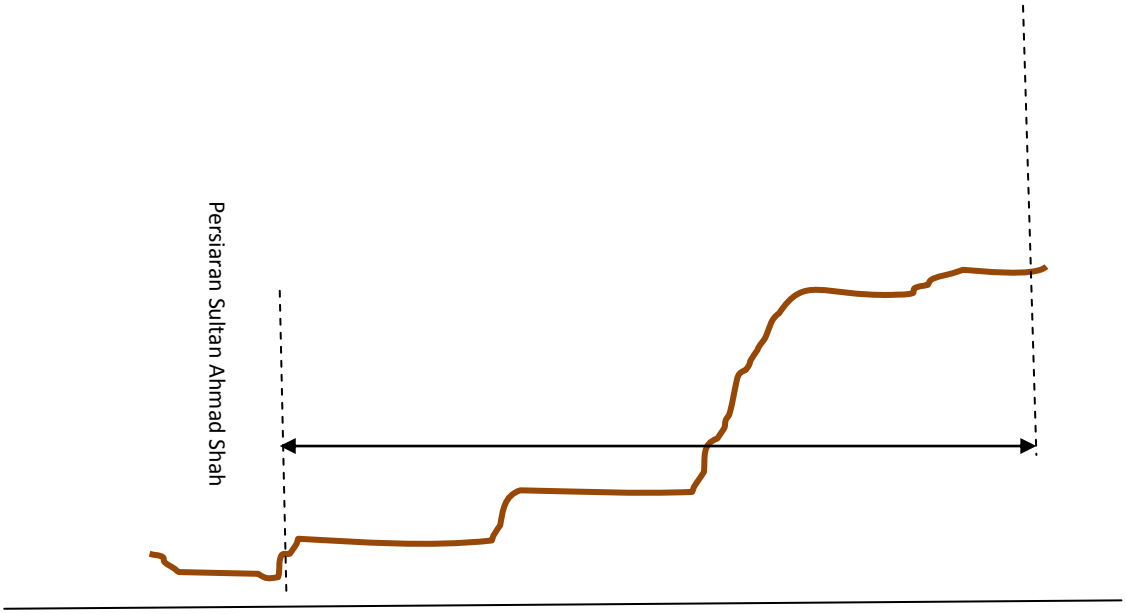


Fig. 3:4 Site Profile (not to scale) South West –North East section

The site undulating profile of the site provide the backdrop, strength and design potential to the proposed hospital. Part of the site has been terraced for development to adjoining projects.

3.3 SCOPE OF SERVICES & PHYSICAL INFRASTRUCTURE

The hospital should be able to accommodate the following services:-

3.3.1 Development for 2012 (PHASE 1)

3.3.1.1 **The Outpatient Services** from the following departments/units:-

- Emergency Department
- Specialist Clinics
- Ambulatory Care Centre (ACC) (*Medical & Surgical Daycare, Endoscopy Suites, Day Oncology Services*)

3.3.1.2 **The Inpatient Services** from the following departments/units:-

- Inpatient Wards (*VVIP suite*)
- Intensive Care Unit (ICU)
- Cardiac Care Unit (CCU)
- Neonatal Intensive Care Unit (NICU)
- Coronary Intensive Care Unit (CICU)

3.3.1.3 **The Diagnostic and Treatment Services in** the following departments:-

- Operation Theatre Complex
- Labour and Delivery Unit
- Radiology Department
- Pathology Department
- Mortuary &Forensic Services

3.3.1.4 **The Medical Support Services**

- Pharmacy Department
- Medical Social Worker and Counseling Services Unit
- Central Sterile Supply Department (CSSD)
- Rehabilitation Department
- Respiratory and Haemodynamic Unit (RHU)
- Hospital Medical Store
- Logistic & Ambulance Services

3.3.1.5 **The Non Medical Support Services**

- Catering Department
- Linen Holding Unit
- Medical and Engineering Services

- Cleaning and Housekeeping Services
- Waste Management
- Security and Safety Services

3.3.1.6 Training, Research & Educational Facilities

- Clinical Examination Centre
- Continuous Medical Education Training Centre
- Clinical Research Centre
- Health Education Unit

3.3.1.7 Administrative Offices

- Hospital Administration Department
- Academic Office
- Admission and Revenue Collection Unit
- Registration & Medical Records Department
- Information Technology and Hospital Information Services

3.3.1.8 Staff & Students' Facilities

- Housemen Complex
- On Call Unit
- Nurses' Hostels *(Annex*)
- Clinical Specialist Complex (*Including visiting professors accommodations*)
- Essential Staff Housing *(Separate buildings*)
- Recreational Centre
- Creche /Nursery

3.3.1.8 Public Amenities

- Main Entrances and Hospital Street
- Cafeteria

- Visitors' Residence (Relatives)
- Religious Facilities
- Discharge Lounge
- Public, staff and students parking area
- Public transport enclosure
- Play ground, therapeutic/restorative garden and spaces

3.3.2 Development until 2027

- **Provision for Primary Health Care Centre**
- **Provision for Private Clinics**
- **Expansion to Ambulatory Care Centre**
- **Expansion to Diagnostic and Treatment services area**
- **Expansion to Specialist Clinics**
- **Expansion to Ambulatory Care Centre**
- **Expansion to Wards and Inpatient areas**
- **Expansion to Private Wing**
- **Expansion to Research facilities**
- **Additional staff quarters**
- **Expansion to parking facilities**
- **Provision of Nursing Schools**
- **Others (unforeseen)**

3.4 PLANNING & DESIGN PRINCIPLES

IIUM Hospital is a teaching, service and research hospital with both a public and private wings. The hospital caters for the needs of patient, medical and alied health students, medical staff, engineering services / energy, maintenance, visitors, patient's relatives and other. The planning of this hospital must therefore be able to reflect meeting of these requirements including the use of INFORMATION TECHNOLOGY & AUTOMATION together with the Regulatory Authorities requirements on fire, safety, environment, social, political

climate requirements, either medical or non medical, state of the art technology requirements.

The hospital is proposed to be master planned based on the following criteria:-

3.4.1 Sustainable design approach

The building should be combined with an architectural, engineering, site planning and landscaping (multidisciplinary) approach to designing an energy efficient building that will optimize the energy efficiency of a building especially when employing combined passive and active devices. For example, adopting mixed mode systems, i.e. maximizing day lighting and thermal comfort while minimizing solar gain would be a strategy to achieve energy efficiency. In some cases mixed mode systems will maximize daylight and thermal comfort whilst minimizing solar gain. Designing within contextual climate and site are the first steps in the reduction of the overall energy consumption that will result in operational cost savings. Design solutions must strive to optimize the benefits provided by the specific environment and to use environmentally friendly materials of high quality and durability in order to decrease waste.

3.4.2 Site planning and organization

Site planning and consideration should consider the best orientation for the buildings. The orientation of the buildings may also contribute to the immediate microclimate of open spaces through the provision of shading to the immediate surroundings that will in turn benefit the indoor areas adjacent to it. The microclimate information (temperature, radiant temperature, wind direction and precipitation, etc) should be analyzed for the locality in making decision for design tradeoffs.

a. Site Considerations is to indicate:-
   - constraint development
   - opportunities of land development
   - available services to the site

- adjacent land use
- influence of any proposed change
- wind direction
- orientation to sun
- site terrain

b. Site Organisation**,** i.e. Zoning / Rationalisation of:-

- Outpatient Areas,
- Inpatient Areas,
- Diagnostic & Treatment Areas,
- Residential Areas,
- Training & Education Areas,
- Medical Support Areas,
- Non Medical Support Areas,
- Service Areas,
- Landscaping & Recreational Areas, etc.

c. Internal and External Circulation, i.e. resolution of traffic analysis to indicate:-

- Vehicular access and egress		Main Entrance, Emergency Entrance, Labour Delivery Entrance, Rehabilitation Entrance, VVIP entrance, Mortuary, Catering, Medical Stores, Maintenance;
- Traffic separation	-	in terms of staff, patient, visitors,

		students, private patients, VVIP, cadaver, supplies and disposal flow, food, sterile and contaminated;
- Pedestrian Access	-	Covered walkways;
-External Circulation	-	including service yards and temporary as well as designated parking for staff on duty-emergency dept, etc ;
- Parking Provision	-	PHASE 1 Approximately 1000 car parks (400 for Public (Outpatient & Visitors/ Private) ,600 for staff Parking for Staff Accommodation, 100 (housemen, nurses and specialist)-*estimated only* *FUTURE PHASE* *Multi storey parking with linkage to existing structures to support staff, visitors, patient and, students.*
- Public Transport	-	For buses, taxis and other future services.

Direct vehicle access is required to the following:

Future Primary Healthcare Centre

Specialist Clinics

Ambulatory Care Centre

Emergency Department (adjacent to Disaster Management site)

Rehabilitation Department

Continuous Medical Education Centre

Main Entrance

Kitchen/Catering Department

Hospital Medical Store

Mortuary

Linen Holding

Engineering Workshop

Plant Rooms

Waste Holding

Service Entrances

Staff Accommodation

Main Entrance (of the Hospital) may receive the general public, visitors and staffs. There should be easy access from the main entrance lobby by visitors and the general public who wished to go to other entrance/venue without going through the unauthorised routes.

d. Engineering Services Development

To develop Engineering Concept with IT and Automation coordinated with the architecture & medical requirements to the following:-

- Site Infrastructure;
- Mechanical Services;

- Electrical Services;
- Hydraulic Services;
- Vertical and Horizontal Transport System;
- Communications;
- Fire Prevention Services;
- Medical & Non Medical Gas Supply Services;
- Emergency Services;
- Sterilizing Services;
- Electro-Medical Services;
- Waste Disposal System including Sewerage;
- Ventilation System including Air Conditioning; and
- Major items of Equipment**.**
- **Other**

e. Environment

(i) Able to promote a positive attitude to the patient's health, patient's need for privacy, self esteemed and integrity; pleasant staff working environment and suitable retreat and restorative areas.

(ii) In Patient Accommodation (e.g. wards) Areas to be able to control the ventilation system to suit comfort level and clinical requirements i.e..air conditioned, fan and natural ventilation;

(iii) All long term habited area or room (staff and patient areas) to have access to view, natural daylight, and nature;

(iv) Long corridors of be pleasantly designed to be punctuated with rest niche, drinking water breaks, disable friendly support and good way finding;

(v) All areas should be promoted with a sense of security and

comfort with physical and designed provisions to ascertain its confidence to the user;

(vi) Hi -Tech areas with appropriate ventilation, non sterile outlook with less maintenance; and

(vii) All areas if deep plan, to be well orientated with punctuated with courtyards and good way finding as well as systematic signage system.

3.5 DESIGN CONSIDERATIONS (integrated with Green Requirements)

3.5.1 Passive design strategy

The design and construction of the building should takes optimal advantage of its environment and need not impose any significant extra cost as compared to a more highly serviced building. The buildings should have a primary function to provide an internal environment suitable for the purpose of the building. The architectural consideration in designing the building should be influenced by its responsiveness to the immediate environment. The important factors that should be considered include building orientation; building configuration (geometry and layout); effective room depth; floor to ceiling height; location of cores; building façade; internal layout; fenestrations; building materials; roof design and colour; and landscaping and shading.

These factors are just as important as the selection of systems or devices to control lighting and thermal comfort (cooling) within the building.

3.5.1 Daylighting

The building should be designed with emphasis on natural daylighting. The consideration should include the orientation and space organization; shape and size of glazing through which daylight will pass (pass through or penetrate); internal ceiling wall, partition and floor surface properties; the colour contrast between windows and internal adjoining walls and ceilings; protection from solar gain or glare afforded by external and internal shading devices; and optical, solar and thermal properties of windows. Conventional and innovative daylighting systems that collect transport and distribute light deep into buildings and systems that reduce the need for artificial lighting are recommended.

3.5.2 Facade design

Correct choice of building materials for façade design can help minimise solar heat gain. The exterior wall and cladding systems should be designed to provide an integrated solution for the provision of view, daylight control, passive and active solar energy collection (e.g. building integrated photovoltaic, solar water heaters, ventilation systems, etc), and moisture management systems (e.g. dehumidifiers) while minimizing heat gain. One of the most fundamental components in a building facade design is windows. They provide a climatic relationship between the exterior and interior in the form of light, sound, air and view of the exterior. It may not be possible to utilize all the functions simultaneously.

3.5.3 Natural ventilation

Natural ventilation is the use of the natural forces of wind and buoyancy to deliver sufficient fresh air and air change to ventilate enclosed spaces without active temperature controls or mechanical means. Fresh air is required in buildings to alleviate odours and improve indoor environmental quality. Provisions for naturally ventilated lobby areas, corridors, lift cores, staircases should be encouraged. This could aid compliance to the requirements from the fire authorities for smoke venting of the spaces in the event of a fire. In some of these cases, spill air from adjacent spaces is sufficient to provide for the required air change to ventilate the space and provide thermal comfort with reduced energy. Natural ventilation strategies rely on the movement of air through space to equalise pressure.

Therefore the building should basically considered two methods for providing ventilation; cross ventilation (wind-driven); and stacks ventilation (buoyancy-driven).

3.5.4 Strategic landscaping

Strategic landscaping can reduce heat gain through several processes, including shading from the sun, shielding from infiltration at higher levels and the creation of a cooler microclimate around the building. Creating cooler

microclimate may involve strategic landscaping techniques through maximising softscape and implementation of aquascape. Appropriate choice of material for the hardscape will be more favorable to help reduce the heat gain and reflection at the surrounding spaces. It is also important to properly shade any air-conditioner unit i.e. external condenser, to maximise the efficiency of the condensers. (The terms softscape, aquascape and hardscape may require definition)

3.5.5 Planning Strategy

The complete/final complex should be functionally efficient with:

Minimal travel distances, appropriate departmental relationship, route with least congestion;

The complex should be designed to provide flexibility for the accommodation of future needs on broad horizon:

Adaptable to changes in caseload, new equipment, changing pattern of hospital base care, able to expand whenever departments require it;

3.5.6 Therapeutic Environment

The complex should be designed to provide an environment,

That it is approachable, non institutional will enable to promote patient's health, patient's attitude;

Therapeutic in nature, preserve patient's privacy, esteemed and dignity;

minimize stress to staff with pleasant working environment.

The phasing of the development should reflect the priorities of need

- The phasing of the development program be such that the hospital can continue to operate effectively and efficiently without reduction in bed strength or building structures which will inadvertentlybe replaced at some near future date.
- The design should be humane in scale, reflect and respect the religious spiritual connotations, local culture, and climatic conditions, using the

appropriate regional architectural expression, economic to construct, and where applicable accommodate accepted norms.

In addition, the design should be:

- Safe to occupants and users of buildings, (i.e. no infection, no harming)
- User friendly (good way finding, barrier free/disable friendly, child friendly, elderly friendly and gender friendly)
- *Ibadah* friendly
- of appearance that blends well with the overall Kuantan campus, its vicinity, and
- Innovative.
- efficient

3.6 SUGGESTED ZONING & MASSING PLANS

3.6.1 Conceptual Zoning FOR PHASE 1 development (refer Fig.3: 6.1).

Areas not covered in the brief refer to future developments:

Fig. 3: 6.1 Conceptual Zoning of the Main Component of the IIUM Hospital to site context

CHAPTER 4
THE HOSPITAL BRIEF

4.0 THE HOSPITAL BRIEF

4.1 Role Statement

The IIUM Hospital will serve as a patient focused, *ibadah* friendly teaching, service, research and continuing medical education hospital for the local, regional (ECER), national and international catchment population.

Complimenting the national healthcare network for patient care, the hospital will receive patients from private and public facilities through walk- in at Primary Health Care Centre and Emergency Department; and through referrals to other services.

The hospital is a tertiary hospital with secondary services. Patients needing higher level of care will be referred appropriately within and outside the country.

The hospital will start as a 300 beds hospital and expanded till 800 beds in the future.

Located within the IIUM Medical Campus, advance research that does not need hospitalization or use of hospitals, the facilities will be complimented by existing and proposed components in the respective kulliyyah /academic buildings.

As primarily a teaching hospital, this hospital will be appropriately provided and equipped with teaching and learning facilities/spaces throughout the hospital.

Services provided by IIUM Hospital include:

- Outpatient Care Services (including General Outpatient at PHC, Ambulatory Care Centre)
- In patient Care Services
- Medical and Non Medical Support
- Teaching, Research and Continuing Medical Education

The overall organisation of the hospital and the relationship to the Kulliyyah of Medicine and other relevant kulliyyahs /faculties will be described in 4.2 of the document.

The Whole Hospital Policies (WHP) in 4.3 of the document will described the policies governing the overall operation of the hospital. The policies affect the running inter and intra the departments and facilities i.e. via users, services and systems according to their functions and needs.

Facilities provided are detailed in the respective departmental briefs in 5.0 The Departmental Briefs.

4.0 THE HOSPITAL BRIEF

4.2 OVERALL ORGANISATION

4.2.1 OPERATION AND MANAGEMENT

4.2.1.1 ORGANIZATION STRUCTURE OF IIUM HOSPITAL IN KUANTAN.

a) The organization of the hospital will be by a board of managers chaired by the dean of the Kulliyyah. The dean of the kulliyyah is also the director of the hospital to help coordinate activities between these two key institutions. The members of the board are comprised of:

(i) The Dean – as chairman of the board
(ii) Kuantan Campus Director
(iii) Director of Administration for IIUM Hospital
(iv) Three Deputy Deans:

- Academic Affairs
- Research & Postgraduate
- Student Affairs

(v) Three Deputy Directors:

- Clinical Services
- Non Clinical Services
- Paramedical Services

(v) Director of Administration for Kulliyyah of Medicine
(vi) Finance Director
(vii) Security Manager
(viii) Heads of all the clinical departments
(ix) Directors of SBU
(x) Head Librarian

(xi) Head of Development Division Kuantan Campus

b) The board of managers is answerable directly to Rector of the University on all matters relating to the hospital and the kulliyyah. All academic matters will be under the direct supervision of the senate in the usual way. Other issues such as clinical and non-clinical issues are under jurisdiction of the board and supervised by the office of the rector.

c) All the members of the board must attend the monthly board meeting and the attendance should not be delegated unless prior permission is obtained from the chairman. It is expected that all members of the board will play a very active role in the management of IIUM Hospital.

d) Brief description on duties

(i) Deputy Dean Academic

The Deputy Dean of Academic is in charge of all matters pertaining to the undergraduate academic programs conducted at the Kulliyyah of Medicine and IIUM Hospital. He will be assisted by the relevant officers to coordinate all activities across the departments in both hospital and kulliyyah.

(ii) Deputy Dean Postgraduate & Research

The Deputy Dean of Postgraduate & Research is in charge of all matters pertaining to the postgraduate academic programs conducted at the Kulliyyah of Medicine and the hospital. Under his office, there will be officers to help him manage all postgraduate matters.

He will also be in charge of all research activities conducted at the Kulliyyah and IIUM Hospital.

The Clinical Trial Unit will also be under his purview.

(iii) Deputy Dean Student Affairs

The Deputy Dean of Student Affairs is in charge of all matters pertaining to the student activities for both undergraduate and postgraduate students. The activities may be conducted outside the kulliyyah or the hospital but they are coordinated and approved at this office. He will be assisted by the relevant officers to coordinate all activities across the departments in both hospital and kulliyyah.

(iv) The Deputy Director of Clinical services

The Deputy Director of Clinical services will be in the main coordinator for the clinical services in the hospital. He is expected to organize a monthly meeting with all the relevant clinical heads and representatives from paramedical sections to co-ordinate various clinical services and disciplines.

He is also expected to be in charge of all issues pertaining to patient care.

He will be assisted by the relevant officers to coordinate all of these activities across the departments in both hospital and kulliyyah.

(v) Deputy Director of Clinical Support

The Deputy Director of Clinical Support will be in charge of all paramedical staff and all their activities in the Hospital. He is expected to organize a monthly meeting with all the relevant clinical heads and staff to organize and co-ordinate various clinical

support activities across the services and disciplines.

He will be assisted by the relevant officers to coordinate all these activities.

(iv) Deputy Director of Non Clinical Services

Deputy Director of Non Clinical Services will be in charge all other matters related to the non clinical services in the hospital. These areas are represented in the organizational chart. He is expected to hold a monthly meeting to look into all non-clinical matters on the hospital. The coordination meeting is attended by all relevant heads of services, divisions and departments.

His office will be assisted by officers and staff to coordinate the services in the hospital and help in the management.

(Refer appendix appended to this chapter for IIUM Hospital Organisation Chart)

4.2.2 OUTPATIENT CARE SERVICES

4.2.2.1 Emergency Department

The emergency department will operate on a 24 hours / 7 days a week basis in 3 duty shifts for paramedics

It will provide reception, assessment, examination & treatment services to patients who have been injured, involved in accidents or have acute surgical or medical emergencies including poisoning.

An observation bay will be provided to monitor the patient's condition for not more than 24 hours before deciding whether he/she will be discharged or admitted.

An asthma bay to cater for acute asthmatic patients will also be provided

4.2.2.2 Specialist Clinics

These clinics will provide reception, assessment, examination, laboratory investigation and diagnosis, and treatment to patients

Outpatients will attend the specialist clinic by appointment and referral cases

At first visit to the specialist clinic, patients will be registered at the common registration area in the main wait. Subsequently, they will attend the appropriate clinic after prior appointment and after paying the fees or producing guarantee letter.

After having seen by the doctors and necessary investigations and treatment carried out, the patient gets a subsequent appointment and leaves the clinic

4.2.2.3 Ambulatory Care Centre

Patients requiring day care procedures will attend the Day care unit after having had their appointments through specialist' clinics. Day Care surgeries will be carried out in the dedicated operating theatres.

Facilities for medical daycare procedures will also be done in medical section of the unit

4.2.3 INPATIENT CARE SERVICES

The in-patient care services will provide accommodation for patients who need medical care (diagnostic, therapeutic & rehabilitative activities) and nursing care, which they cannot receive as out patients. The hospital will provide in-patient care for general medicine, surgery, paediatrics, obstetrics &

gynaecology, psychiatry, dermatology, dental, ENT, ophthalmology and geriatric.

In principal, the wards will be differentiated by gender, age, payment scheme (for private wing) and official use. Generally the wards will be designated to a particular discipline but with regards to more flexibility, some wards may be utilized by more than one specialty.

The wards will facilitate the constant observation of patients and allow a full range of treatments and procedures to be carried out

Cases needing intensive care will be warded in CICU, ICU/CCU. Children at 12 years and below with either medical or surgical problems will be held in paediatric ward.

Adequate provisions will be made for the care of infectious cases requiring isolation

4.2.3.1 Intensive Care Unit (CICU/PICU/Other)

This unit will provide intensive care for:-

- Severely ill cases with unstable vital function
- Cases of post-operative observation for continuous monitoring
- Cases who may require treatment on life support urgently

Patients may be admitted to the unit directly from Emergency Department, operation theatres or due to any complications, which may occur during hospitalization in the wards. Since all patients will be bed-ridden and are connected to monitoring or life support system their condition requires constant observation, supervision and care of skilled nursing team.

4.2.3.2 Cardiac Care Unit (CCU)

This unit will provide care for;-

a) Severely ill cases with unstable vital function
b) Cases of acute angina and myocardial infarction

It will provide services such as monitoring vital signs through central monitoring system, life support procedures. Assessment, treatment and resuscitation of acute medical condition

Patients may be admitted from Emergency Unit or through Specialist clinic or wards within the hospitals or transfer from other hospitals

4.2.3.3 NICU

This unit will provide facilities for new born abbacies under one month old, whether born in hospital ,in other health facilities or at home because of their prematurity, low birth weight, respiratory distress syndrome or other medical problems requiring skilled observations.

The NICU will provide care for newborns & neonates:

a) Intensive care for those babies requiring constant care, observation and monitoring
b) Intermediate care for infants who do not require intensive care but still require frequent and special degrees of observation.

4.2.4 DIAGNOSTIC AND TREATMENT SERVICES

4.2.4.1 Operating Theatre Complex

Surgical procedures will be carried out under local and general anaesthesia within an environmental that is clean and pathogen free.

Post-operative observation will be provided in the recovery room, where the patients will be observed until they have recovered from general anesthesia and until they are stabilized

The sterile supplies will be obtained from CSSD. Sterilization of fragile and expensive instrument/equipment such as scopes will also be done in the O.T

4.2.4.2 Labour and delivery Unit

The labour and delivery suite will cater for normal delivery cases from the first stage till delivery.

Elective cases with complications needing emergency management/caesarian section will be sent to O.T Mother and healthy newborn babies will be transferred to the post natal area of the maternity ward.

Premature or ill babies will be transferred to SCI/NICU for intensive care nursing. However, a bay is to be made available adjacent to the labour unit to accommodate an incubator, to ensure that the newborn is kept warm before transferring out.

4.2.4.3 Pathology Department (including Blood Bank & Mortuary)

The pathology department will provide level 3 laboratory services to outpatients. Services/investigations provide will be in:

- Biochemistry
- Hematology
- Serology
- Microbiology
- Serology
- Histopathology
- Blood screening & transfusion
- Blood donation and Blood banking and
- Other (as specified)

Tests, which cannot be carried out in this department will be sent to the level 4 laboratory at a nearby hospital or to IMR.

4.2.4.4 The mortuary

Will provide cool storage for bodies and their release to the family members or authorized persons. There would be separate freezers for Muslim, non-Muslim and foul bodies.

4.2.4.5 Radiology Department

This department will provide general imaging and ultrasound examinations. In some instances, x ray films may be sent to the radiologist at other hospital with radiologists for reading and reporting. Besides the static x ray services, mobile x-ray services are also required to cater for the ill or immobilized patients.

Daylight processors will also be provided

4.2.5 MEDICAL SUPPORT SERVICES

4.2.5.1 Pharmacy

The pharmacy Department will be responsible for the following activities:

a) Dispending of all pharmaceutical products to in-patients and outpatients, including the health clinics in the district.
b) Patient counseling in the use of drugs
c) Drug information provision and therapeutic drug monitoring
d) Monitoring drug usage, trend and cost effectiveness.
e) Education &training of staff
f) Management of the integrated store in the particular district i.e. purchasing of drugs, medical equipment and other medical/surgical supplies

Distribution to the wards will be carried out in a unit of use ward supply system and items on the indent will be distributed on a weekly basis

The system on' Discharge of package' will be implemented in which dispensing of medication for patients on discharge will be done at the bedsides.

4.2.5.2 Hospital Medical stores

The medical store will be under the responsibility of the Pharmacy Department. The functions will include ordering, receiving, quality control, storing and distribution services for medical and non-medical/domestic items

This store will not handle food supplies for kitchen nor stationery. A separate inflammable store is required to handle flammable materials to avoid any potential fire hazards

The acquisition procedure of equipments and supplies will be carried out in accordance with the MOH guidelines and policies.

4.2.5.3 CSSD

The CSSD will provide centralized sterilization services fro the hospital and health clinics around the area. However, commercially sterilized products will not be stored here but in the medical store. An initial cleaning of used instruments will be carried out in the user departments prior to exchanging supplies.

4.2.5.4 Medico-social Unit

The medico social unit will provide counselling services and support to patient especially with social and financing problems

4.2.5.5 Rehabilitation Unit

This department will provide physical rehabilitation to outpatient and in-patient so as to maximize the potential for

full recovery and to reduce the period of physical impairment.

4.2.5.6 Logistic (Porterage and Transport) Ambulance

The porterage services will be centralized. The services will be responsible for the transport of patients and delivery of supplies such as meals, trolleys, medical and non-medical supplies.

The hospital shall provide ambulance service and transportation for staff where indicated and for supplies.

The ambulance shall be used for pre-hospital care and the transportation of patients.

4.2.6 NON-MEDICAL SUPPORT SERVICES

4.2.6.1 Catering services

The hospital kitchen will provide central catering and dietary services to all in-patients, staff on call and OT staff. Diet counselling and preparation of special diets will be carried out by the dietician. Plating will be done in the kitchen

The distribution of meals will be carried out by the central porterage service. Dishwashing and cleaning of trolleys will be done in the kitchen.

4.2.6.2 Infant nutrition

Although the hospital adopt policy of baby-friendly hospital, central milk kitchen will still provided for paediatric, maternity and NICU.

4.2.6.3 Linen services

The hospital will not provide laundry facilities. The laundry service will be privatized. The linen holding area will cater for storage and distribution of clean linen. Mending and repair of torn linen and tailoring of patient clothing, staff gowns and unit attire will also be done by the private contractor.

The unit will supply clean linen to the entire hospital. Collection of used and distribution of clean linen will be done by the private contractor. Cleaning of soiled/contaminated linen will not be carried out by the user department/wards. Soiled line will be collected in the hazard bags to be cleaned and washed by the contractor.

4.2.6.4 Waste Holding Bay

All biohazard waste materials will be collected according to MOH guidelines and kept in waste holding bay. The private contractor will come to the user department to collect the waste for incineration.

Water supply is required for the daily cleaning of the waste holding areas.

Domestic waste will be sent to a separate holding bay to be collected by the local council on a regular basis.

4.2.6.5 Engineering/maintenance

The engineering service will be privatized. This department will be responsible for the surveillance, maintenance and repair of buildings, engineering system, plants and medical department, maintain the inventories and records on equipment, buildings as well as plans and service manuals of engineering maintenance.

This unit will also be for the planned preventive maintenance programmed for buildings, engineering services, plant and equipment.

4.2.6.6 Security Service

The entire security service of the hospital will be managed in house including visitor's control, hospital traffic system, and security of car parks and hospital grounds.

4.2.6.7 Cleaning and housekeeping

The cleaning services of the entire hospital will be privatized and the scope of services will be as in the contract schedule.

4.2.7 TRAINING, RESEARCH & EDUCATIONAL SERVICES

Undergraduate, Postgraduate, Research and Continuing Medical Education activities will be the main activities in this hospital. This sections and the faculty/Kulliyyahs will be responsible in carrying out the various training programmes including for the staff of the hospital, from other hospitals, health clinic local, regional and international .

The facilities include the CME Training Centre, Clinical Examination Centre, Clinical Research Centre, Health Education Unit and teaching and learning /students' station throughout the hospital (i,e. tutorial/ seminar.rooms)

4.2.8 ADMINISTRATIVE SERVICES

4.2.8.1 General Administration

The administration office will be responsible for the overall management of the hospital and is directly under the responsibility of the Director of the hospital – Dean of KOM.

This office will provide general administrative services, management of all personnel and finance including procedures for admission and revenue collection.

4.2.8.2 Admission and Revenue Collection

This service is part of the activities of the general administration. This unit will be responsible for the processing of patient's admission, collecting deposits, maintenance of record of patients' guarantors, collecting of revenue, issuing of receipts and etc.

This unit will also function as the enquiry/information counter.

Once a patient is discharged, his/her bill will be automatically generated in the ward terminal, issued to the patient and he/she will then make payment at the revenue collection counter.

4.2.8.3 Nursing Administration

The nursing administration will be responsible for the delivery of nursing care, management of nursing personnel and female attendants including counselling to staff. This unit will also be responsible for the nurses training programmed and management of the nurses' hostel.

4.2.8.4 Supervisory Services

This supervisory unit will be responsible for the management of personnel like medical assistants, male attendants, drivers and general workers.

This unit will be in charge of the ambulance service, transport service and central porterage service. This unit will also monitor reinforcement of the support services that are privatized i.e. housekeeping and hospital ground maintenance services, security of the buildings and compound as well as maintenance of car parks.

4.2.8.5 Hospital Information System (I.T)

This unit will be responsible for the management of the computer system. This will include hardware and software development, maintenance and the network linkages/communication between the various activities in the hospital.

4.2.8.6 Academic Office

For multidisciplinary academic staff on station at the hospital with basic office facilities and receiving of mails/notices

4.2.8.7 Registration and Medical Records

4.2.8.8 Facility Management Office - maintenance

4.2.9 STAFF AND STUDENTS' AMENITIES

4.2.9.1 Recreational Facilities

Facilities for recreational activities will be provided such as tennis court, netball courts and facilities for indoor activities like table tennis and a gymnasium.

4.2.9.2 Staff accommodation

Quarters will be provided for the identified staff according to their eligibility.

A hostel with single rooms is to be provided for nursing staff and short staying staff who come for attachment/training.

On-call rooms will be provided in the wards for the medical officers on duty.

On Call Units for 2nd on call, Housemen Complex, Clinical Specialist Complex and

4.2.9.3 Creche/Nursery

4.2.10 PUBLIC AMENITIES

4.2.10.1 Visitor's Residence (Balai Pelawat)

The Balai Pelawat or Visitors' Residence shall be provided for the patient's relatives who have come from far and who wish to stay overnight at the hospital. A common hall for families is provided with a certain degree of privacy. Attached toilets bath and washing facilities will be provided. Cooking is not allowed, however area for dining will be made available.

4.2.10.2 Cafeteria

This will be a common cafeteria for all and specific for staff / students/ private wing, serving meals and beverage. The management will be by the private contractor.

4.2.10.3 Shops/retails, Post Office/, ATMs

A shop for florist and sale of toiletries, etc. will be made available to be run by a private contractor. It is located at the main entrance of the hospital

4.2.10.4 Other facilities

There will be Spiritual Meditation Facilities for Muslim and other faith; Discharge Lounge for waiting patients; Playground and restorative gardens, parkings and public transport enclosure for buses and taxis.

IIUM HOSPITAL ORGANISATION CHART

4.0 THE HOSPITAL BRIEF

4.3 WHOLE HOSPITAL POLICIES

4.3.1 PATIENT FLOW

4.3.1.1 GENERAL (HOSPITAL)

a) Admission and Revenue Collection

(i) All non-emergent patients for admission will present to Admission and Revenue Collection Unit (ARCU) at the hospital Main Entrance. Inpatient admissions will have clerical details completed and pay their admission deposit before being escorted to the appropriate ward. On discharge, the hospital fees will be paid at the ARCU.

(ii) Outpatients, including booked referrals to Diagnostic and Treatment Departments such as Radiology, will pay their fees or deposit and then go to the servicing department where they will present their receipt at the registration desk. Case notes will be opened in the outpatient department.

(iii) Emergent admissions shall have case notes opened in the Emergency Department but general admission will be completed on the unit by the admission staff, the next day if necessary. Previous medical records shall be retrieved from Medical Records Department at all hours. Women in labour may present themselves directly to Pregnancy Admission Centre (PAC) or the Labour

& Delivery Unit (LDU), while a representative may complete the documentation.

(iv) Patients unable to pay their bills will be referred to the Welfare Officer for counseling and determination of the mode, and discount on, payment.

4.3.1.2 OUTPATIENT CARE SERVICES

a) Specialist Clinics Outpatient

(i) Specialist Clinic Outpatient will be by appointment or referral basis only.

(ii) At first visit to the specialist clinic, patients will be registered at the respective registration area in the main waiting area. Following that, they will be directed to the appropriate clinic after paying the fees or producing a credit card or guarantee letter.

(iii) After seeing the doctor and necessary investigations and treatment carried out, the patient may be admitted or given a follow-up appointment and leaves the clinic.

(iv) For follow up clinic visits, the patients may go directly to the relevant clinic and report at the clinic reception desk before seeing the doctor.

(v) Payment for follow up clinic visit may be done at the clinic reception desk if the payment is by a credit card or the use of a guarantee letter,

otherwise all other payments are done at the main registration area of the specialist clinic.

(vi) Patients who require medications following clinic consultation may proceed to pharmacy for payment and collection of medications.

(vii) All other types of payment should be done at the main registration area.

b) Emergency Patients (other)

(i) Emergency cases other than labour delivery will only be seen at the emergency department following a triage.

(ii) After seeing the doctor at the emergency department the patient goes through investigation (if necessary) and treatment after which the patient goes home or is admitted to the ward or a short stay at the observation ward.

(iii) Payment for all emergency cases is done at the main registration area of the emergency department.

(iv) Emergency cases needing surgery will be operated upon at the dedicated Operating Unit within Emergency Department.

Labour delivery

(v) All admissions for labour delivery will be via the dedicated Labour Assessment Area or PAC, adjacent to the Emergency Department.

(vi) Payment for labour delivery is at the registration area of PAC

c) Ambulatory Care Centre

(i) Patients requiring day care procedures will attend the day care unit directly after having had their appointments made through specialist clinics or following an inpatient stay.

(ii) Patients must register at the registration area of the ACC before they proceed to the relevant section of ACC for treatment or investigation.

(iii) Following the investigation or treatment, patients are either discharged or asked to return to the specialist clinic for review.

(iv) Medications if required are collected from the pharmacy located at ACC.

(v) All payments related to ACC are made at the main registration area of ACC.

4.3.1.3 INPATIENTS SERVICES

a) General

(i) Inpatients will be admitted from the specialist clinics, emergency department or sometimes from day care unit.

(ii) All admissions for elective procedures will be on a scheduled basis.

(iii) In-patients will register at the admission unit which will be located near the main entrance.

(iv) After completing the documentation and admission procedures, the deposit will be collected at the revenue collections unit adjacent to admission. If a patient has not been admitted before, case notes will be started/opened and the information transmitted to the appropriate ward. If the patient has previous record, the information will be relayed to the ward once the patient is admitted.

(v) The relatives of the patients admitted through emergency department will have to complete registration and admission formalities at the admission unit once the patient is admitted to the ward.

(vi) Maternity cases will go directly to the labour and delivery unit and the necessary admission formalities attended to subsequently.

(vii) Patients or their relatives shall pay a deposit or produce a guarantee letter on admission and settle their bills on discharge. Topping-up the deposit may be required during their stay in the ward.

(viii) Private patients will be admitted via the private wing to the private wards.

(ix) VVIP and royal patients are attended to for admission through the private wing in the usual manner.

b) Patient's Movement

(i) Patients will be moved on beds (cot, bassinet, crib) wheelchairs or trolleys; ambulant patients may be escorted on foot.

(ii) The ward or department attendants/porters will be responsible for moving patients within the ward/department as well as to other wards/departments. The patients will be escorted by porters. Centralised and decentralised porterage system will be implemented.

(iii) The following departments shall have dedicated attendants/porters.

1. Emergency Department
2. Specialist Clinics
3. Radiology Department
4. Rehabilitation
5. Intensive Care Units (ICU,CCU, Neuro ICU, NIC)
6. Operating Theatre Complex

(iv) Any patient who dies in the hospital will be transferred on a cadaver trolley to the mortuary by the mortuary attendant.

4.3.2 STAFF/STUDENTS' FLOW

a) General

(i) All staff/Students will enter and leave the hospital through the main entrance or other entrances dedicated for staff entry.

(ii) Staff/Students who wear uniform will change into their uniform at their own respective department before commencing duties or leaving the hospital premises.

(iii) Staff/Students requiring to change into a specific attire will do so at the specific designated location. Areas such as Operating Theatre Complex, NICU/ICU/CICU/CSSD/Labour Delivery Unit will be provided with their own changing and locker facilities.

(iv) Staff clocking for work will do so at the designated area of their assignments (e.g. Staff base)

(v) Students will register at specific location assigned.

(vi) Staff/Students will utilized Staff cafeteria for all round refreshment

b) Staff /Students Staying On Site

(i) Nurses, housemen, students, On Calls and essential staff will have easy access to wards and other departments through dedicated and assigned entrances and exits.

(ii) They will change to their uniform at their residences. All uniforms will be centrally laundered and send to respective residence through central collection points

(iii) Parking is at their respective residence. Staff/Students attend hospital on foot or through shuttle service within campus.

c) Staff/Student staying offsite

(i) Staff/Student shall arrive by public transport or private vehicles which would be parked in the designated car parking area

(ii) All uniform staff shall go to the common staff changes area in the hospital.

4.3.3 VISITOR CONTROL

a) General

(i) Visitors will be allowed in during visiting hours from 1.00 - 2.00 p.m. and 4.30 - 7.30 p.m. (*not applicable to Private Wing)*. Parents or guardians of paediatric patients will have 24-hour access to visit the patients. However, access to NICU will be restricted at the discretion of the paediatrician in charge. Mother of babies in NICU will be encouraged to room in the mothers' room for breast feeding and interaction.

(ii) In the paediatric wards, mother and child beds will be provided for all.

(iii) The spouses of women in labour will be allowed in the LDU on specialist's discretion. The spouse and next of kin are allowed to visit maternity patient beyond the normal visiting hours.

(iv) During the public visiting hours all visitors will be allowed to visit without pass/identity control. Visitors, who need to visit beyond the public visiting hours, will have to obtain authorisation from the responsible person on duty in the respective department or from the general information counter at the main entrance lobby. These visitors will obtain visitor passes. Only holders of such passes will be allowed to enter the inpatient departments during non visiting hours.

(v) Designated visitors' waiting areas will be provided at the lobby, wards and departmental areas.

b) VVIP Patients

(iii) Visitors will be allowed in to the wards through dedicated entrance and reception

(iv) Dedicated lounge with refreshment facility is provided.

(v) VVIP Visitors' waiting area are provided.

(vi) Dedicated children play area with play attendants are provided at the wing on request.

4.3.4 GENERAL AMENITIES FOR VISITORS AND RELATIVES

a) There will be a relatives' waiting area for visitors or relatives waiting for patients. The location of this area shall be scattered as appropriate. Examples of these

locations include in ICU, Labour Delivery Suite, OR and ACC.

b) There should be a visitors' residence for relatives looking after long stay patients located adjacent to the hospital. The accommodation should house approximately 50 persons.

c) Muslim and Multi-faith Spiritual facilities will be centrally located.

d) Restorative and healing spaces will be adequately provided where appropriate.

e) Adequate provision of cafeteria and business outlets in areas where there is public congregation.

4.3.5 MEDICAL AND NON-MEDICAL SUPPLIES

a) Pharmacy Supplies

(i) Pharmaceutical items will be supplied to the medical store as scheduled. This store will supply drugs, vaccines and other surgical items, to the user departments on a scheduled basis.

(ii) The inpatient satellite pharmacy will be at the various decentralized locations, one for a group of 4 wards. These satellite pharmacies will receive items once a week as per indent, from the main pharmacy store and from the medical store.

(iii) The pharmacy will prepare drugs for each ward on the unit of use system. Dedicated staff will collect the wards' drug carts for return to the pharmacy in the morning of each day. These carts will be restocked by the pharmacy for return to the wards. Changes in ward drug instructions after the late

morning rounds by doctors will be made known through computer terminals.

(iv) Dangerous and restricted drugs will be locked in the carts and checked out of the pharmacy and into the ward by authorised staff.

(v) Medical items supplied for the hospital will arrive at the centralised receiving area of the medical stores where the supplies will be inspected and officially received. Supplies through inventories will be divided and directly moved into the designated store area. Non-inventoried items will be immediately delivered to the user departments which ordered these items. Refrigerated laboratory material and drugs will be stored here before being delivered to the pharmacy and pathology departments. Some laboratory items will be delivered directly to the laboratory on arrival.

(vi) All flammable items and gas cylinders will be stored in the separate inflammable storage area. This area will be remote and secure against potential hazards. A small inflammable storage area is required in the pharmacy department to support the preparation area.

(vii) All prescriptions for inpatient discharges, specialist clinics and emergency department during office hours will be dispensed by the pharmacy department through Out-Patient Pharmacy. Prescriptions from Emergency department outside of office hours shall be dispensed by ED with medication sufficient only to last till the next working day.

(viii) Private Wing dispensary, ACC Satellite Pharmacy and PHC Satellite Pharmacy will be supplied from the Pharmacy Department.

b) Non- medical Supply

(i) Non-medical items, including furniture and stationery are under the purview of the general administration. Items will be stored in the general store.

(ii) Condemned and non-functional items will be stored in the condemned store prior to disposal.

c) Sterile supplies

(i) Commercially sterilised items will be ordered and supplied by the medical store.

(ii) Items ordered by the CSSD will be sent directly to this department.

(iii) Sterilised sets and instruments will be supplied on an exchange basis.

(iv) The transport of the sterile items will be carried out by the CSSD porterage staff.

(v) Used instruments will be pre-washed and counted in the user department prior to depositing them into respective containers or bags to be sent to CSSD.

4.3.6 FOOD SUPPLY AND SERVICE

a) Supplies

(i) All food and food products shall be purchased directly by the kitchen.

(ii) Bulk food items such as rice, noodles, sugar, jam, etc. will be provided by vendors on a scheduled basis. These items will be stored after being checked by the kitchen staff.

(iii) Fresh food will be delivered by contractor's lorries in the morning (before 8.30a.m) on a daily basis. At the receiving area they will be checked, weighed and accepted or rejected.

(iv) Accepted fresh items e.g. meat, vegetables, fruit, etc. will be brought to the designated food preparation areas for further processing. These items may need to be stored in the freezer and cold room for later use.

b) Distribution

(i) A centralised food plating and washing system will be practised. The food distribution will be carried out by food trolleys and containers. All meals will be plated in the kitchen using conveyer belt system. Meals will be plated and loaded into the food trolleys in the serving area and the central porterage staff will deliver the meals, to the wards using motorised transport system.

(ii) Trolleys and containers will remain in the wards for the duration of each meal after which they will be collected by the central porterage staff and

returned to the kitchen for washing and waste disposal.

(iii) All dish-washing will be carried out in the kitchen using mechanical dishwasher. In case of equipment failure a manual washing area is required.

(iv) The ward pantries will also keep light nourishment for patients who miss meals or for the routine beverage needs of the patients.

(v) All patients will be supplied with four main meals a day. Dietary guidelines produced by the Ministry of Health will be followed.

(vi) Hospital staff will have their meals in specified rooms only i.e. staff rest room. These rooms will be kept clean of leftovers at all times as a measure of pest control.

(vii) Certain staff will be provided with food from the kitchen e.g. doctors on call, nurses on night shift, etc.

4.3.7 LINEN SERVICES AND SUPPLIES

a) The linen service will be privatised. Thus the services and supplies for linen will be as agreed in the contract schedule.

b) The linen services will exchange and replace the linen supplied to the wards and departments on a regular basis as per contract schedule.

c) Soiled linen from the wards and departments will be placed in special bags to be collected by the contractor according to schedule.

d) Soiled linen in used CSSD packs will be sent to the CSSD and from there sorted out sent to the laundry to be collected by the contractor.

e) A minimum of three sets of patient's linen per bed excluding stock will be available at any time except for blankets & mosquito nets which will be made available in adequate numbers.

f) Provision of a linen holding area will be the responsibility of the hospital, where the dirty infected linen for autoclaving will be stored before sending to the private laundry. The hospital will also provide decentralised clean linen holding areas in the wards and other areas including the hostels.

4.3.8 LOGISTICS (PORTERAGE AND TRANSPORT SERVICES)

a) Internal Transport

(i) The porterage services will be centralised. However, areas like operating theatres, imaging department and kitchen may have their own dedicated porterage service.

(ii) Each ward will retain a ward attendant who will, in addition to other duties, carry out any urgent transport of patients or supplies.

(iii) The services will be managed generally by a pre-arranged routine stock top-up system at fixed times.

(iv) As a part of the duties, routine supply process, central porterage personnel will distribute materials and supplies to the end-users departments. A motorised transport system will be used to move things laterally and vertically between the buildings.

(v) The central porterage service will also be responsible for the transport of patients. Dispatch of specimens for testing will· be by a system such as the multi-channel pneumatic system. The results from the laboratory will be relayed and displayed at the wards or clinics via the computer terminals.

(vi) Relevant department such as wards, intensive care area and operating theater complex will be connected by this pneumatic tube to the laboratory, pathology, pharmacy and Radiology Departments for ease delivery.

c) External Transport

(i) The hospital will provide ambulance services and transportation for staff where indicated and for carrying supplies. Numbers and types of vehicles supplied will conform to the norms of the Ministry of Health. Usage is as follows:

(ii) the ambulance will be used for pre-hospital care and the transportation patients;

(iii) the hearse will be used for the transportation of dead bodies from the hospital to the home of the deceased;

(iv) the van is generally used for transportation of supplies;

(v) the minibus is generally used for mobile blood bank service and for the transportation of staff and ambulant patients;

(vi) the saloon car will be used for transporting staff on official duties;

(vii) the lorry will be used for transporting goods and supplies.

Charges for the use of hospital transport shall be in accordance with the Fee Ordinance (Medical) Order 1982.

4.3.9 CLEANING AND HOUSEKEEPING SERVICES

a) The cleaning and housekeeping activities will be privatised and the scope of services will be as per contract schedule.

b) Certain cleaning functions such as cleaning of benches and special rooms in the Laboratory and Pharmacy , cleaning of the carts and OT floor between the cases in the Operating Rooms will remain the responsibility of the departments' own staff.

c) The following domestic activities will be the responsibility of the respect department's staff:

- Special cleaning activities as mentioned above.

- Daily routine cleaning activities in the wards, in ICU / CCU/CICU, in NICU and in the Labour & Delivery Unit.

d) In addition to the above, the following services may be carried out through privatized services:

- cleaning of windows, louvers, railings etc. (except within the Operating Theater suite)
- cleaning the ceiling and fans;
- buffing and sealing and polishing of floors;
- maintenance of grounds;
- cleaning of drains, etc.

e) The matron and hospital supervisor shall supervise the overall cleaning of the hospital in their respective specified areas.

4.3.10 WASTE MANAGEMENT SERVICES

a) Overall responsibility of waste management lies with the private contractor and scope of services will be as per contract schedule.

b) Overall responsibility of waste management lines with the Director of the Hospital:

(i) A senior staff member shall be identified to train staff on how to handle waste and monitor standards.

(ii) Hospital waste is categorized as clinical waste, radioactive, chemical waste, pressurized containers and general domestic waste. It shall be collected by workers by privatized company form the disposal room and transported to the respective central. At the various areas of the departments it will be responsibility the staff at work.

(iii) All clinical waste consideredas hazardous and shall be place in yellow bags or containers. It shall be sealed when three- quarters (3/4)full and collected for incineration daily. The methods of disposing the different types of clinical waste are:

Group A

- soiled surgical waste, dressing, swabs, human tissues,etc, shall be placed in yellow plastic bags. Waste from infectious cases and human tissues such as placenta should be placed in double plastic bags. However limbs from operating Theater will be held in the mortuary pending collection be relatives.

  Unclaimed limits will be transported to the incinerator;

Group B

- Sharps, shall be placed in sharps containers and when ¾ full, sealed and placed into yellow plastic bags;

Group C

- Waste from laboratories and post-mortem rooms that are potentially infectious, shall be disinfected before disposing into yellow plastic bags. If necessary, the waste may be placed in light blue plastic bags for autoclaving and then sealed in yellow bags for disposal;

Group D

- Solid pharmaceutical waste, shall be placed in yellow plastic bags and disposal of by inceneration unless recommended otherwise by the manufacturer e.g. for chlorates. Small quantities of liquid pharmaceutical waste may be diluted and disposed of through the sewerage system. Liquid waste will be disposed of the special sinks will placed and acid raps, on ED and Pathology Department. Cytotoxic waste and associated contaminated material (needles,vials,etc.) shall be placed in designated containers and then put into yellow plastic bags for incineration;

Group E

- used disposable bedpan liners, stoma bags, incontinence ads, Etc, hall be placed yellow plastic bags.

The collection, storage and transportation of radioactive waste shall comply with the requirements of the Atomic Energy licensing Act 1984.

Chemical waste may be hazardous (toxic, corrosive, or non-hazardous:

- hazardous chemical waste shall be disposed of by the most appropriate means according to the nature of the hazard. Because it often has toxic flammable properties, hazardous chemical waste shall not be disposed of in the sewer system;
- non -hazardous chemical waste may be disposed of along with general waste
- Pressurized containers shall be placed in black plastic bags and disposed of as general domestic waste.

c) General waste may be non-hazardous (paper,food,plastic bags and disposed of as general domestic waste.

(i) non-hazardous general waste shall be placed in black plastic bags and disposed of by the local authority;

(ii) hazardous general waste require special handling. Light - bulbs and fluorescent tubes shall be collected unbroken by the local authority;

(iii) Pooled workers shall not handle waste in unsealedor open bags and waste in light blue bags (prior to autoclaving)

d) Food waste to be removed with one day from the site to avoid decaying high temperatures and unhygienic and offensive odors. Otherwise they will have to be kept in an appropriate refrigerated area.

e) Out dated and returned drugs will be disposed by the Pharmacy.Empty bottles will be washed in the Pharmacy washing area before reuse.

f) Confidential documents will be shredded in the Medical Records Department under thr direction of the Director of the Hospital.

g) Empty gas cylinders will be reprossessed by the suppliers

h) Obsolete or unusable furniture and equipment will be removed by the central pottering staff and sent to the designated store until they are condemned or sold as scrap by tender after permission is obtained from the state.

i) Items for reprocessing include instruments, linen and kitchen implements.

j) Operational policies pertaining to these items have been explained in previous sub-sections (sterile supply, food supply, linen service)

k) All waste and disposal items will have to be segregated at the point of origin into easily identifiable, colour coded containers by the department's own staff prior to their collection by the staff of the private company.

4.3.11 ENGINEERING POLICIES

(refer 4.4)

4.3.12 CLINICAL POLICIES

a) Infection Control

(i) Infectious patients will be nursed in single rooms wherever possible. The use of multi-bedded rooms for the same type of infection is acceptable.

(ii) Immuno-compromised patients will be nursed in Isolation rooms/wards with clean and air-conditioned environment.

(iii) Cross-infection precautions will include frequent hand-washing and the use of gowns by anyone having direct contact with infectious or burn patients.

(iv) Clinical wash-hand basins with elbow action taps will be provided in all patient areas.

(v) Soiled instruments will be pre-washed before depositing them into respective containers or bags. All instruments used by infectious patients will be double-bagged immediately in special bags (without soaking) and sorted only after decontamination.

(vi) All clinical waste from infectious patients will be double-bagged in yellow plastic bags for disposal by incineration. Management of· the clinical waste will be as privatisation contract.

(vii) The infection control officer will provide advice and guidance on the proper method of collecting specimens, precautions in preventing transmission of infection, training of hospital staff and bring to the attention of the hospital infection control committee problems related to the control of infection.

b) **Sterilisation**

(i) Sterilisation of all instruments and materials including tubing, ointments, etc. will take place in the central sterile supplies department (CSSD) and the following areas:

- sterilisation of scopes and delicate equipment will be carried out in operating theatre and day care unit.
- short cycle sterilisation will be made available for the use of the operating theatre, respiratory and haemodynamic unit and dental clinic only;
- sterilisation of bottles will be done in the milk kitchen;
- sterilisation of pharmaceutical materials will be carried out in the pharmacy department;
- sterilisation of media, glassware and infected specimens will be carried out in the pathology department.

(ii) Clinical policies with regard to infection control and sterilisation should follow the latest guidelines adopted by the Ministry of Health Malaysia

4.3.13 STAFF POLICIES

a) Staff Safety

(i) All departments will identify safety precautions for their work areas and ensure that their staff observes these safety measures.

(ii) All staff will adhere to universal precautions when handling patients, specimen and soiled materials.

(iii) There will be at least 2 staff members in attendance when treating patients that require extra safety precaution for staff safety.

(iv) All safety measures as stated in DOSH will be adhered to when dealing with staff safety issues.

b) **General Staff Amenities**

(i) Separate vehicle parking areas will be made available for the staff.

(ii) Space for recreational facilities, both indoor and outdoor will be made available for staff.

(iii) Staff rest rooms, multi-lockers and prayer rooms for Muslim staff will be provided.

(iv) Dedicated staff health clinics will be provided for health and well being of the staff.

(v) A dedicated cafeteria will be provided for staff.

(vi) On call complex will be built for the medical staff

(vii) Accommodation will be provided for the resident medical and nursing staff

(viii) Dedicated crèche area for staff children.

4.3.14 ACCESS AND PARKING

a) There should be an adequate and designated parking area for the staff, students, patients and visitors to the hospital without unnecessary disruption to the smooth flow of traffic into and out of the area.

b) Access and road system in the hospital should comply with Bomba requirements.

c) The emergency department and the clinics will have a separate entrance and will not be used as the main thoroughfare for entering the hospital.

d) Labour and delivery suite, rehabilitation, primary health centre, mortuary and ACC will also have their own entrance and exit.

e) There should be a separate entry and exit point for supply, deliveries and engineering services

d) Public transport will be allocated a public transport enclosure.

e) A covered link way is to be provided between the hospital and the public transport enclosure

f) No parking will be allowed in front of the emergency department and the main entrance porch. Designated parking area for ambulances at the emergency department for easy access. There must be adequate provisions of parking spaces for disabled patients and visitors

g) Hospital vehicles other than ambulances will be parked away from the hospital frontage.

h) All hospital vehicles will have covered parking.

4.3.15 SECURITY

a) A tight security system (with intercom system provided) should be developed using up-to-date technology.

c) Entrance to selected departments and wards should have mechanical control system or electronic system to enhance security

d) Visitor control in the hospital street will be maintained at lift entrances and other relevant areas such as entry and exit points.

e) For temporary safe keeping of small items belonging to patients, a small lockable drawer at the staff base shall be available. For longer duration, the items will be transferred to the main safe in the administration department.

f) Cash collected at all counters; e.g. specialist clinics, emergency department, etc will be placed in a money box which will be kept in a locked drawer at the reception counter. It will be transferred to the main safe in the administration department at the end of each day.

g) Controlled drugs will be stored in the controlled drugs cupboard which will be equipped with a sound alarm and a light alert.

j) Regular site patrols will be undertaken by security guards.

k) Certain areas will have special security precautions e.g. medical records, delivery suites, NICU, medical store, ICU, CCU, etc. using up-to-date technology. Staff at the nurse base should be able to monitor visitors through CCTV and intercom.

l) Visitors will only be allowed in during visiting hours, unless in exceptional circumstances. Security officers will be responsible for visitor control at check points. Separate visitors waiting area will be provided.

m) A special security system must be in place for the security of babies or in other patient areas where appropriate.

4.3.16 FIRE PRECAUTIONS

a) The Hospital will have its own fire contingency plan and conduct fire drills regularly.

b) The policies to deal with fire precautions must strictly adhere to the guidelines issued by Bomba department.

4.3.17 COMMUNICATION SYSTEM

a) Telephone

(i) A type 'A' PAX line (direct dialing throughout the country and overseas) and a separate direct telephone line will be made available for the director of the hospital and some of the departmental' heads.

(ii) Other heads of department and unit will be provided with a type 'B' P ABX line (direct dialing throughout the country).

(iii) All other telephone lines within the hospital will be of type 'c' (able to receive outside calls through the operator and can only dial - directly within the hospital).

(iv) Telephones will be for official use only unless authorized.

(v) Public phones should be provided adequately to cover all public areas within the hospital.

b) Nurse Call System

(i) An efficient and reliable nurse call system should be provided within each ward for communication

(ii) The system should be sound- friendly and easy to operate.

(iii) A staff emergency call system will be provided in staff areas within a ward to alert all staff in the event of an emergency.

c) Intercom

(i) Intercom facilities will be provided in dedicated areas e.g. emergency department, ICU, OT etc.

d) Paging

(i) Doctors, paramedics and officers who are on call will be provided with an appropriate paging system.

(ii) The guidelines from the Ministry of Health on the paging system will be complied with.

e) Two-way Radio Communication

(i) A two-way communication system will be in operation between the emergency department and the ambulance while responding to an emergency call and communication control.

f) Public Address System

(i) The public address (PA) system will be used for making announcements, providing information and entertainment via pre-recorded light music or suitable radio programmes.

(ii) This system should employ an on and off option to each department to maximize usage.

(iii) The PA system will also be used for emergency call measures, preferably through the use of specific codes.

(iv) The system must be fully compliant with Bomba requirement.

g) Teleconferencing / Patient Education

(i) There should be a teleconferencing facility to link the OR, auditorium and seminar rooms in CME, and Endoscopy Suite in ACC for simultaneous live demonstration.

(ii) Patient education programme will be telecast to patient beds and all patient waiting areas through TV screens and monitored centrally from the health education unit.

(iii) Each ward and patient/relatives waiting area will be provided with TV facilities as appropriate,

(iv) Every bed or ward area in the private wing and VVIP/Royal Suite will be supplied with TV facilities.

(v) All seminar rooms should be equipped with TV, motorised screen, overhead LCD projector and tele-videoconferencing facilities.

(vi) Tele videoconferencing facilities in the hospital should be linked with the kulliyyah.

4.3.18 TEACHING & LEARNING, RESEARCH

a) Undergraduate and postgraduate medical and allied health training are provided here in the hospital.
b) Continuing Medical Education activities will be carried out as part of the training activities for IIUM medical staff as well as medical professionals in the industry.

4.3.19 ADMINISTRATION & MANAGEMENT

a) The hospital administration will be responsible for the running and operation of the hospital
b) The academic entity will be lead by the Dean of Kulliyyah of Medicine as Chairman of the board of hospital advisors.
c) The facility operation will be headed by a Facility Manager under the Hospital Administration

4.0 THE HOSPITAL BRIEF

4.4 ENGINEERING SERVICES

a) The engineering services assume a very important role in the day-to-day and long term operation of a hospital by providing:

   (i) Suitable and safe physical environment;
   (ii) Transportation;
   (iii) Support services;

b) For the delivery of high quality health care.

   Engineering services in a hospital is highly capital intensive with equally high recurring costs of energy and maintenance. The engineering services design and implementation should, therefore, take the following factors into consideration;

   (i) Ease of operation
   (ii) Energy efficiency
   (iii) Durability
   (iv) Maintainability
   (v) Flexibility
   (vi) Responsive to new technology

c) Engineering Services will be carried out in house Engineering Department of the hospital.

d) Scheduled technical and engineering visits will be conducted on regular as well as requests for emergency maintenance requirements from all the departments of the hospital

e) Engineering department will be provided to manage engineering utilities.

f) Comply with the latest Guidelines, Codes and standards such as:

(i) MOH Design Guidelines for mechanical services.

(ii) MOH Design Guidelines for electrical services.

(iii) MOH Design Guidelines For fire protection in general Hospitals, 1993

(iv) HTM 22 for piped medical gases and NHS model Engineering Specification C11.

(v) BS 6651 for Lighting Protection.

(vi) AS 2500 – 1986 for guide to safe Use of Electricity in patient care

(vii) AS 3003 – 1985 Electrical Installations in Patient Treatment areas of Hospitals, Medical and Dental Practice

(viii) Regulations of Uniform Building By-Laws, 1984 of Malaysia

(ix) BS 5655 for electric Traction Lifts

(x) Malaysian Environmental Quality Act 1974 (as at 1991)

(xi) Requirements of Jabatan Bomba Malaysia

(xii) Water and Plumbing services to the requirements of the state Authority and the local water Authorities.

(xiii) Drainage Services to the requirements of local Municipal Authority and/or the drainage and irrigation Department (JPS)

(xiv) MOH standard and Norm for medical Gases (KKM P&P S.N 1/89)-latest edition

(xv) MOH (engineering Services Division) Guidelines for fire Protection in general Hospitals (latest edition)

(xvi) Private Healthcare Services and Facilities Act.

(xvii) Environmental Act

(xviii) Radiation Act

(xix) Other

g) Suggested Specification subject to current requirements

(i) Air Conditioning & Ventilation System

1. In addition, the following design criteria should be followed:
2. The low velocity constant volume system for OR, ICU/CCU/CICU, NICU, PICU should be of ‘built-up’ or specifically packaged unit to suit the application.
3. The graded pressurisation should be by design of difference in air-change rates. Complicated damper devices are to be avoided.
4. Air locks may be necessary to achieve satisfactory correct direction of air flows.
5. Total air balance, take into account of all supply and exhaust air must be calculated for the department concerned to unsure at least ½ AC/hr in relation to the external environment.
6. OA must be taken from clean environment externally at high level and preferably from the up-stream of prevalent wind.
7. All obnoxious exhaust must be taken to the highest point of the building. This includes fume, cupboards, OTs, toilets, etc.
8. Separate exhaust system must be provided for obnoxious discharges, foul toilets, Kitchen, distinct from general exhausts for stores, etc.
9. All OA for fan coil system must be pre-filtered and pre-dehumidified. The fan coil bearings must be of ball or roller type to ensure long life. Full cooling output must be able to be achieved at medium speed. Condensate drain pipe must be at least of 20mm (¾ “) diameter.

10. Should reheat quantity be small, electric reheat may be used to achieve design conditions. Otherwise, heating hot water is preferred.
11. Isolation Room air-conditioning system in ICU must be a dedicated system and has the capability to pressure reversible. Air locks will be required to ensure satisfactory operation. Minimum 2-stage filtration with high efficiency being the final stage. Infectious exhaust should have HEPA filters with UV lamps located upstream from HEPA filters.

(ii) Medical Gases

1. Piped medical gases are intended for the development of the hospital of the Hospital. With the exception of remotely located departments where local bottle storage/manifold system is permitted. Where medical gasses are used infrequently and the department is remotely located, trolley service should be used.
2. Piped reticulation should ensure ease of ‘tee off’ for future expansions.
3. Alarms and shut-off valves should be installed according to HTM 22.
4. Industrial compressed air or mechanical service control system compressed air should be separate and dedicated systems.

(iii) Steam Boilers and Hot Water System (where relevant)

1. Minimum of 2 oil fired steam boilers should be installed. One as normal duty, the other providing full capacity standby.

2. Oil storage should be external and automatic pump feed to the day thank. Provide condensate return and water treatment for boilers feed water.
3. Ensure adequate ventilation in the central plant.
4. Domestic hot water generation by steam is per requirement. Local electric hot water unit is recommended for remotely located departments.
5. Boilers should be designed to enable conversation from oil fuel to natural gas.
6. Each Boilers should be separately fuelled. For 2 or more flues a combined wind shield may be constructed.

(iv) Lighting, Power and Electrical distribution

1. Lighting

1.1 The lighting levels should follow MOH Design Guidelines. Any specific requirements are stated in the Departmental Design Brief.

1.2 Ensure that suitable energy efficient light sources are used in the lighting design

1.3 Sufficient light switching are incorporated for reasons of operation as well as the facility for switching ‘off’ to conserve energy

1.4 Take particular care in the design for both direct and indirect glare controls in patient and work areas, eg. overbed lights should have an upward and downward components and separately switched.

1.5 A percentage of lights should be connected to essential power supple circuits for safety of movement.

2. Power and electrical distribution

2.1 Adhere to Masterplan Brief concept of providing essential and non-essential electrical distribution

2.2 Use fuse switch units for all LV submains protection

2.3 Ensure that adequate essential supple is provided to run the essential mechanical services, hydraulics and fire protection systems.

2.4 Provide automatic power factor correction at site main switchboards

2.5 Give consideration to the provision of UPS in critical patient areas. IIUM/MOH should be requested to identify the requirements, taking into account the overall standby systems and the need of any specialised medical equipment being utilised.

(v) Communication systems

1. Telephone

The telephone points are nominated in the Departmental Brief. This means that block cabling and terminal block are provided at the points. Only install handsets to points approved under IIUM/MOH Norm.

2. Nurse Call and Emergency Call

2.1 The Nurse-call system should be of simple hard wired system comprising call points, over-door dome lights and dome lights at call points.

2.2 Provide call point at each bed side, toilet, bathroom and treatment room.

2.3 Annuciatiors should be located at the Nurse station and utilities

2.4 Nurse-call system for the ward unit should be self-contained.

2.5 Electronically complexed system will only confuse the patients and add complexity to the duty of the nursing staff

3. Emergency Systems

3.1 The system is provided for medical and nursing staff to call for assistance. The system is required for OTs, Recovery and ICU/CCU/CICU.PICU,NICU, LDU and other areas, connecting to the staff Control Base.

3.2 The call button should be red in colour and any associated dome light should be capable to ‘flash!’

(vi) External water supply

1. Extension of existing water supply mains from elevated tank to the hospital and annexes
2. Installation of separate pumping water mains to supply roof water storage tank of PHC, ACC apart from Main Hospital complete with implementation of booster pump set consisting of duty pump and standby pump.
3. Pumping system will be provided with essential power supply to ensure continuous water supply during power failures.

4. Retain direct incoming water mains for Residential buildings

(vii) Internal Water Supply-Plumbing Services

1. Internal building water supply will be provided for all Hospital buildings by gravity from the elevated water storage tank. The PHC, ACC, Staff Residence will be provided additionally with an own roof tank from where water is distributed by gravity to all levels of the building
2. New roof storage water tanks shall be of type FRP manufactured from fibreglass panels or approved equivalent to provide long term services.
3. For all new buildings the incoming main supply and internal distribution pipe work, complete with valves, fittings and accessories will be installed according to MOH guidelines.
4. The internal plumbing, fittings and accessories for buildings and floor spaces which will be refurbished will be replaced and upgraded as required to ensure a proper system
5. Hot water will be provided from steam-heater calorifiers located in the Central Plant Room and reticulated by pressure throughout the buildings on the main Hospital site.
6. All hot water piping installations shall be carried out with copper pipes according to MOH standard
7. Individual electric hot water heaters will be installed fro buildings located remotely from the Hospital Building such as On Call Units, Mortuary, Staff Quarters, and Nurses Hostels.

(viii) External sewage system

1. All existing sewage piping network of buildings which will be retained will be renewed, upgraded and where necessary, the 100mm (4”) pipes will be replaced with minimum 150mm (6”) diameter vitrified clay pipes.
2. New sewage piping installations will be carried out for the new buildings. The new building sewer pipes will be connected to the new sewage reticulation network
3. All existing septic tanks(where relevant) and their sewage pipings will be demolished and a new Central Sewage Treatment Plant will be implemented. A new sewage mains pipelines will be provided to connect the site reticulation network with the new plant.
4. The installation of a new sewage treatment plant and the new reticulation network in current development will be made accordingly to accommodate increasing sewage discharge capacities up to 2027.

(ix) Internal sewage system and plumbing

1. The existing plumbing system in buildings which are selected for refurbishment will be repaired and upgraded where necessary and damaged sanitary fittings and fixtures will be replaced or repaired.
2. All new hospitals buildings will be fitted with a combined soil and waste piping system, reticulating by gravity to the external sewage mains
3. Each gravity line from existing and new buildings will be fitted with an overflow relief gully traps at the perimeter of the building in the from of a riser terminating

with a grated cover at ground level to ensure access to the system

4. For the internal plumbing network, high grade PVC pipes can be used for the installations with aggressive/high temperature effluent discharge eg. Laboratories, Film Processing Room, these departments will be serviced by cast iron pipelines.

(x) Fire Protection Systems and Appliances

1. It is to be noted that all recommendations for fire protection services and requirements are states according to the regulation of Uniform Building By-Laws of Malaysia. During the Detailed Design stage the approval for all purposed services must be obtained from the local Fire Fighting Authorities
2. External Hydrant system will be fed directly from the water mains and hydrants shall be of type double outlet pillar hydrant.
3. Dual Siamese booster couplings shall be positions at suitable fire engines access location, close to external hydrant to enable the fire engine to pressure the system
4. Provision of sprinkler system for 6-storey Ward Block with separate roof water storage tank and associate pump set.

Note: all departments will be sprinkled in the multi-storey building. Please refer to Departmental Design Brief notes.

5. All fire fighting booster pumps shall be connected to essential power supply; provisions for remote alarm indication
6. All automatic fire detection/alarm systems shall be equipped with backup battery.

The fire protection system will cover all new, existing refurbished and extended buildings.

4.0 THE HOSPITAL BRIEF

4.5 HOSPITAL BED DISTRIBUTION

The IIUM Hospital beds distribution is given in table form

DEPARTMENTS	WARDS	BED NUMBER PHASE 1
Medicine	2	54
Surgery	2	54
Advance Obstetric & Gynaecology	1	27
Orthopaedics	2	54
Paediatric/Adolescence	1	27
Neurosurgery/Psychiatry	1	20
Cardio-Respiratory	1	27
VVIP suite (Single Rooms)		
ICU		10
HDW		6
Neuro ICU		4
CCU		4
CRW		4
CICU (Cardiothoracic)		4
NICU		5
Total	**10**	**300**

4.0 THE HOSPITAL BRIEF

4.6 HUMAN RESOURCE REQUIREMENTS

4.6.1 IIUM will acquire human resource for the operation of IIUM hospital through the following means

a) through specific staff training programme (on going for all categories)
b) as training facilities for clinical years/training block
    (i) Medical Students
    (ii) Paramedics
    (iii) Allied Health
    (iv) Nurses
    (v) Others
c) As teaching, learning, research and consultancy services of IIUM Academic/teaching staff of
    (i) Kulliyyah of Medicine,
    (ii) Kulliyyah of Allied Health,
    (iii) Kulliyyah of Nursing and Sciences
    (iv) Kulliyyah of Dentistry
    (v) Kulliyyah of Pharmacy
    (vi) and other relevant Kulliyyahs of IIUM
d) through international and local(Malaysian) medical staff and student exchange programme
e) through World Health Organisation programmes
f) through the Organisation of Islamic Conference
g) through private accredited teaching programme and NGOs
h) through Ministry of Health Malaysia (MoH) for
    (i) interns/housemen training

(ii) post basic training

(iii) specialist training

(iv) clinical research collaboration

i) and other sources

4.6.2 Staff Student Ratio and patient for Teaching Hospital (refer Table 4.6.2 : 1)

Kulliyyah	Staff student ratio	Student per beds
Medicine	1 : 4	1:4
Nursing	1: 15	1:12
Allied Health Sciences		
1. Nutrition Sciences	1: 8	-
2. Audiology & Speech-Language Pathology	1:4	-
3. Diagnostic Imaging & Radiotherapy	1:4	-
4. Optometry & Visual Sciences	1:4	-

Table 4.6.2 : 1 Staff student ratio and patient *(source: IIUM Kullyyah of Medicine (2009).*

4.6.3 Staffing required for the immediate operation of IIUM Hospital in IIUM Medical (Kuantan) Campus by designation is as in Table 4.6.3: 1.

NO	DESIGNATION	NOS

NO	DESIGNATION	NOS
1.	Dean/Hospital Director	1
2.	Deputy Hospital Directors	6
3.	Chief Pharmacist	1
4.	Hospital Pharmacists	25
5.	Assistant Pharmacists	50
6.	Chief Radiographer	1
7.	Senior Radiographers	4
8.	Radiographers	25
9.	Chief Medical Lab Technologist	1
10.	Senior Medical Lab Technologists	4
11.	Science Officers	35
12.	Medical Lab Technologists	20
13.	Chief Medical Assistant	1
14.	Senior Medical Assistants	7
15.	Medical Assistants	90
16.	Nurse Manager	1
17.	Matrons	3
18.	Sisters	30
19.	Senior SRN	150

NO	DESIGNATION	NOS
20.	SRN	1000
21.	Chief Hospital Attendant	1
22.	Senior Hospital Attendants	10
23.	Hospital Attendants	200
24.	Ambulance Drivers	20
25.	Chief Medical Record Officer	1
26.	Medical Record Officers	3
27.	Assistant Medical record officer	7
28.	Chief Dietician	1
29.	Dietician	6
30.	Cook	25
31.	Chief Physiotherapist	1
32.	Senior Physiotherapists	5
33.	Physiotherapists	15
34.	Senior Occupational Therapist	1
35.	Occupational Therapists	5
36.	Chief Medical Social Worker	1
37.	Medical Social Workers	5
38	Optometrist	2

NO	DESIGNATION	NOS
39.	Medical Physicist	2
40.	Prosthetic and Orthotics	1
41.	Religious / Clinical Counselor	5
42.	Embryologist	2
43.	Clinical psychologist	3
44.	Health Education Officer	2
45.	Audiologist	2
46	Speech Therapist	2
47	Mortuary attendant	3
	ADMINISTRATIVE STAFF	
1.	Head of Marketing (PRO)	1
2.	Human Resource Manager	1
3.	Finance Manager	1
4.	Engineering & Maintenance Manager	1
5.	Engineers	4
6.	Chargeman	2
7.	Boilerman	2
8.	Technicians	10
9.	Accountants	3

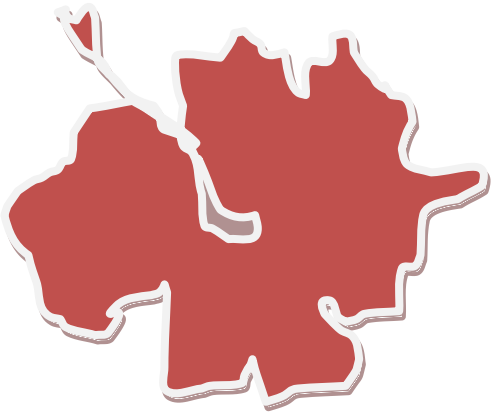
NO	DESIGNATION	NOS
10.	Clerical/Admin/Secretarial Staff	70
11.	General Staff (Admin)	5
12.	Hostel Manager	1
13.	Hostel Supervisor	4
14.	Hostel General Staff	5
15.	Drivers for Administration	5
16.	Telephonists	6
	MEDICAL STAFF (utilizing the hospital)	
1.	Hospital Specialists (Academic Staff)	200
2.	Medical Officers	100
3.	Housemen	80
	IT DEPARTMENT	
1.	IT Manager (DU/UD)	1
2.	Admin IT Manager (N48/44/41)	1
3.	Network Engineer (J)	1
4.	Information System Officer (F)	3
5.	Assistant ISOs	10
6.	Technical Assistants	2
7.	Technicians	6
	LAUNDRY SERVICES – *OUTSOURCE/PRIVATISED*	

NO	DESIGNATION	NOS
1	Laundry Manager	1
2.	Laundry Staff (Senior)	2
3.	Laundry Staff	7
	DENTAL STAFF	
1.	Dental Officer	2
2.	Dental Sister	1
3.	Staff Nurse	2
4.	Dental Assistants	4
6.	Attendants	5
	SECURITY SERVICES	
1.	Chief Security Officer	1
2.	Deputy Chief Security Office	1
3.	Security Officers	50
	TOTAL STAFF	**2000-3500**

Table 4.6.3: 1 Proposed Staffing for IIUM Hospital

CHAPTER 5
DEPARTMENTAL BRIEFS

5.1 Outpatient Services



5.1.1 Emergency Department
5.1.2 Specialist Clinics (*including Private Specialist Clinics*)
5.1.3 Ambulatory Care Centre (*Medical & Surgical Daycare, Endoscopy, Day Oncology Services*)

5.1 OUTPATIENT SERVICES

5.1.1 EMERGENCY DEPARTMENT

5.1.1.1 FUNCTIONAL DESCRIPTION

a) The department will provide comprehensive emergency care for all medical emergencies and acute trauma cases including emergency diagnostic and treatment resuscitation intermediate care and initiation of definitive care.

b) Most definitive care services and procedures requiring surgical intervention can be done in the departmental and Emergency Operating Unit. The department should be fully equipped with radiology/medical imaging facilities including CT Scan and Ultrasound machine for the provision of critical medical care.

c) Patient requiring observation and monitoring will be placed in the observation ward in the department.

d) Follow-up of cases will be seen in the respective clinic disciplines.

e) The department will also provide pre-hospital care in the forms of ambulance services. Two-way communications will be provided between the department and the ambulance.

f) Department will provide spaces for NGOs to assist in the department.

g) Complete helipad facilities will be provided to aid the air ambulance services.

h) Disaster control room with direct communication systems with other agencies like Police, Fire Department, Army and others is required for the disaster management which will be carried out in this department.

i) The department will carry out training programme related to emergency services such as trauma life support, CPR, management of poisoning cases, etc

j) The department will also receive psychiatric patient at designated area. Adequate security for staff and patient should be provided.

k) Infectious disease cases will also be seen here in a separate zone of the green area. Adequate barrier with hygiene facilities should be provided for infection control.

l) Appropriate ICT requirement will be provided department wide

5.1.1.2 OPERATIONAL POLICIES

a) The department will be functioning for 24 hours.

b) The department will practice triage system and non-emergency cases will not be attended /received during office hours. Non emergency cases will be attended to at the Primary Health Care Centre or the nearest health centre in the vicinity.

c) All definitive care procedures and surgical intervention will be done in the department theater suite.

d) **Operational: Staff (Service & Academic)**

(i) The range of staff/academic who will work in the department will include:

1. Nursing - sister, staff nurses, community nurse, trainees.
2. Medical - Medical officers, medical assistant in charge, medical assistants, consultants and medical students.
3. Ancillary - Attendants, porters, cleaners.
4. Allied health personnel

(ii) Day to day management of the department will be carried out by the consultant specialist with senior medical assistant in-charge. A sister will be in charge of nursing staffs.

(iii) Medical assistants, nurses, and ancillary staffs will work on three (3) different shifts or office hours shift, according to the arrangement by the sister and senior medical assistant in charge. Medical students and trainee nurses will be include in the shifts. The shifts are 7.00am – 2.00pm, 2.00pm – 9.00pm and 9.00 pm – 7.00am or as directed where relevant.

(iv) Reception area will be staffed 24 hours a day. Two - three staff will be on duty at any time depending on overall work pattern. A medical assistant is required to man the triage counter. He will need to be able to move freely to and from triage area to red zone's drop-off point into the red zone or yellow area and back to triage. Attendants/porters are expected to

perform other duties within the department when not moving patients or supplies.

(v) There will be a medical officer/team on duty every day after office hours to attend to cases referred by the medical assistant on duty. He/she will be on duty for other disciplines as well.

(vi) Staffs are expected to change from street clothes to uniforms before they start work; and change back to street clothes before going home after work. Staff will take their meals, prepared from home or bought from the cafeteria, at the staff rest room.

(vii) Security, maintenance and housekeeping staff will need to adhere to the ED rules as described in the Whole Hospital Policies (WHP). Privacy and security of the procedures entails.

e) Operational: Patients

(i) Patients will enter the department based on the level of illness.

1. Ambulant (walk-in) patients will enter through the ED main entrance or GREEN zone.
2. Non-ambulant patients will enter through the emergency or RED/YELLOW entrance.

They will be directed from the triage counter and assessment to the appropriate area of treatment by the paramedic staff on duty at the counter prior to

the entrance.

f) Operational: Students

(i) Students will enter the department similar to staff based on their programme.

1. Medical students
2. Nursing students
3. Allied health students.

They will be directed to their work place based on their level of studies.

5.1.1.3 WORKLOAD

It is expected that the department will serve approximately 15 patients in an hour during peak workload hours. Thus, the department shall be designed to cater up to 2, 000 patients per annum.

Cases seen in the department will include;

a) All emergencies except obstetric delivery cases.

b) Poisoning cases, known or suspected.

c) Trauma cases, including dental trauma.

d) Psychiatric cases which are violent/aggressive.

e) Cases brought in by police: rape victims, drunk drivers known or suspected.

5.1.1.4 LOCATIONAL FACTORS

a) Priorities

(i) The Emergency Department (ED) should be located with direct access by ambulances and the general public bringing emergency cases for various cases.

(ii) It should be visible day and night by the public.

(iii) It should have wide and open sides to cater for various categories of patients to avoid depth and minimize time.

(iv) The department should be adjacent to a ‘large open space’ for purpose of disaster management

(v) Direct and immediate access to intensive care (CCU/ICU/PICU) after resuscitation.

(vi) Convenient access/link to laboratories and blood bank for the transfer of specimens to those departments and transfer of results and blood products to ED.

(vii) Convenient access to Main Operating Complex for transfer of major surgical cases not administered in the ED OR.

(viii) Convenient access by general circulation (staff & patient + accompanying relatives only/not public) to the wards for the transfer of inpatient admission.

(ix) Convenient access to haemodialysis unit.

b) Departmental Relationship

The department should be located

(i) immediately adjacent to Radiology Department,

(ii) close to intensive care and Operating Complex as well as the Labour and Delivery Unit through dedicated corridors;

(ii) by closed circulation to Haemodialysis Unit. mortuary and wards,

(iii) linked by automation or systems to Laboratory and medical records.

5.1.1.5 PLANNING AND DESIGN CONCEPT

a) The Emergency Department will have a dedicated vehicular access with route to this department separated from the main common entrance gate of the main hospital road.

b) There should be clear dedicated vehicular access to the different entrances of the ED based on severity of the case as well as quarantine and security case patients

c) There should be clear access from helipad site (if any) to the entrance of ED without crossing public roads.

d) A large space should be allocated adjacent / at the ED main entrance for disaster management and evacuation.

e) A dedicated parking area for essential staff and patients coming to this department is required.

f) Stress free environment with views to the outside, natural daylight, acoustic control, appropriate natural settings with soothing environment, personal privacy and comfort

should be incorporated in all patient and staff areas.

g) Refer **5.1.2.4** for locational factors affecting the planning and design considerations.

h) The design of the department should facilitate triage.

i) The essential planning features of the department are the segregation of the seriously injured from those with only minor trauma. Consideration must also be given to optimizing patient's privacy, both visual and acoustic. It is also necessary to ensure that access and facilities are provided for disabled persons who have problems of mobility or orientation. This included the wheelchair-bound, persons who have difficulties in walking, the elderly and those with a sensory handicap.

j) The Emergency department will be divided into the following zones/area/units:

(i) Reception, Registration and Triage Zone

(ii) Resuscitation and Critical Care (Red Zone)

(iii) Intermediate Care (Yellow Zone)

(iv) Walk in and Wheelchair Zone (Green Zone)

(v) Infectious disease / security/psychiatry Unit

(vi) Asthma Bay

(vii) Observation Ward

(viii) Emergency Operating Unit

(ix) Emergency Radiology Unit

(x) Communication and Dispatching Area

(xi) Disaster Management Centre

(xii) Pregnancy Assessment Centre (PAC)

(xiii) Public and ED staff facilities

k) These zones are briefly described as follows:

(i) Resuscitation and Critical Care (Red Zone)

Where cases are critical condition and need resuscitation.

Critically ill patients arrive on a trolley escorted by up to 4 staff. They may have already commenced resuscitative procedures. Here resuscitative procedures may continue further or may be started.

All round access to patient whilst 1-4 staff using mobile equipment will occur. There will use of overhead rail for suspending I.V. fluid containers during infusion, **use of mobile x-ray machine**, assessing x-rays films on one of the walls with 4 in 1 x-ray viewers panel, writing patients notes, storing sterile supplies/ equipment, clinical hand washing and parking of trolleys.

2 cubicles (including paediatric bay), with each cubicle requires ceiling mounted examination light appropriate equipment, oxygen and vacuum suction outlet and socket outlets for resuscitation e.g. ECG with defibrillator, suckers, etc. Built-in cupboards are also required to store various instruments, drugs and disposables. Clinical wash hand basin is required for this area

It will have intensive care patient management monitoring equipment including:

- Ventilator equipment (portable type)

- Patient monitoring equipment

- X-ray facilities (mobile, to be shared within the department)

- Mini Lab
- Resuscitation beds
- Paediatric and neonatal resuscitation equipment

(ii) Intermediate Care (Yellow Zone)

Patients who are in semi-critical condition and whose haemodynamic status is stable but requiring early attention and immediate care will be treated here. Procedures which will be done here include:

- Airway management and oxygenation

- Immobilization techniques e.g. neck collars, POP

  & etc.

- Compression bandage

- Catheterisation

- Toilet and suturing

- Reduction and manipulation

- Intravenous cannulation

The less critical, conscious and badly injured patients are in on trolleys into the YELLOW ZONE.

All around access by staffs to patient will occur.

There will be the use of overhead rail for suspending I.V fluid containers during infusion, use of mobile x-ray machine, assessing x-ray images from computers and 4 in 1 x-ray viewer panel, writing up patients' notes, storing of sterile supplies, equipment, linen, clinical hand washing facilities and trolley park. There should also be space for accompanying relative in this area.

Asthma is treated in a the Asthma bay within this

Zone (refer Asthma bay for detail description at preceding pages).

(ii) **Non-Emergency/ Walk in and Wheelchair Zone (Green Zone)**

This zone is for stable cases with minor medical/trauma injuries. The cases will be triaged by medical assistants before being examined by medical officers in the consultation and examination rooms.

Paediatric emergency cases will be examined and treated in separate dedicated rooms with a child-friendly environment.

Treatment and counseling for specific conditions requiring privacy like rape, and domestic violence will be carried out in dedicated examination rooms (one-stop crisis center-OSCC) with attached toilet

and shower. It will also have an attached lounge/rest area.

Patients who are dead on arrival (DOA) or who died in the department will be momentarily kept in the department prior to being taken to the mortuary in a dedicated holding area, nearby family waiting area.

(iv) Other Areas

1. Drop off point/ Main Entrance

Drop-off points for ambulant as well as non-ambulant patients are to be provided with covered area of sufficient dimensions so as to give protection to patients being unloaded from the ambulances or private vehicles, some of whom might be severely injured. Protection from the strong wind may also be necessary on exposed sites. There should be dirt screening control at the entrances and within lobbies.

2. Infectious disease /security/psychiatric cases area

Patients suspected of any communicable diseases or come signs of the suspected ailments are screened and located in this area. Access to this area should be away from other public area. Separate ventilation and cleaning system and regime is carried

out here.

Patient will register, pay, wait, consult doctors and treated (where necessary) at dedicated C/E and treatment rooms.

Patients will be admitted or referred to another hospital for further treatment.

If a patient is admitted, he/she must be taken to the dedicated isolation room/ward via a route identified only for these patients.

The trolley or wheelchair used to transport the patient needs to be disinfected with Sodium hypochlorite 1000 ppm and left to dry for 3 hours.

Staff will have a separate entrance to this area with cleaning/decontamination facilities.

3. Observation Ward

Patients requiring observation or prolonged recovery up to 24 hours are monitored at the observation beds in the Observation Ward within ED. If they require longer duration for recovery, they will be admitted to the appropriate ward.

Observation ward is similar to normal ward environment but require closer observation

not more than 24 hours after which a decision of discharging or admitting the patient is made based on patient's clinical status after evaluation. Accompanying relative will be directed to visitors wait.

4. Asthma Bay

This bay is dedicated for the management of mild to moderate asthmatic patients. It is situated between YELLOW and GREEN zones.

A medical team will manage this bay along side the YELLOW zone. This bay should be equipped with wall-mounted piped oxygen and suction facility and fully furnished with comfortable furniture, piped-in music, and good ventilation, making it a very conducive environment avoiding further distress to the patient. A space for accompanying relative will be provided in administering the patient.

5. ED Main Registration Counter

All patients registered through the counter will be seen and examined in the department before transfer to the ward. Treatment may be carried out in the resuscitation area (for stretcher/critically ill patients only), the

consultation/examination room or the treatment room. More acute cases will be wheeled into the resuscitation room/bay for stabilization before transferring to O.T, ICU or other respective department for definitive treatment.

6. Mobile X-ray Bay

Provision for mobile X-ray equipment within the department is required. Charging facilities included.

7. Stat/Clinical Laboratory

Stat lab for immediate test such as blood gases and blood sugar level is required within the department.

8. Consulting/Examination Rooms

For ambulant patients, they are often directed to the C/E room where the doctor will examine them in the GREEN zone. After examination and diagnosis, which may include movement to and from the Radiology Unit/Department, patients will go back to the waiting area or direct to the treatment or plaster room where treatment is carried out. Patient's clinical status are unpredictable and might deteriorate to a more critical condition thus they may also go to emergency

operating unit or procedure room for major procedures if the need arise after resuscitation.

9. Disaster Management

During major disaster, normal workflows will be disrupted and treatment will be carried out based on severity status of the patient. The ambulant patients will either have to wait to be examined or they will be directed to the clinic during normal working hours.

5.1.1.6 WORK FLOW AND FUNCTION OF SPACES

a) WORKFLOW

(i) Description

1. Patient Flow

Patient will be triage on arrival and directed to either Red, Yellow or Green zone

1.1 Critical patient are directed to Red Zone

1.2 Less critical are directed to the Yellow zone and

1.3 Not critical cases are seen in the Green Zone or referred to Primary Health Care Clinic for management.

1.4 Security cases are seen in one stop crisis centre within the yellow zone.

1.5 Paediatric cases are directed to designated area in the relevant zone

1.6 Psychiatric patients wait and seen in designated area

1.7 Infectious patient is directed to designated area.

1.8 Labour delivery emergency patients are send directly to Pregnancy Assessment Centre (PAC). Although PAC is under the charge of LDU. Its location in the ED should facilitate patients of delivery emergency. Access to PAC is to be clearly identified and separated from other emergencies.

1.9 Patients who are dead on arrival (DOA) or who died in the department will be kept in special designated area in the department prior to being taken to the mortuary.

2. Staff Flow

Staff will enter the department through a separate entrance.

Staff will change from outdoor clothes into departmental uniform in the staff changing room.

Staff will change or wear appropriate attire.

3. Student's Flow

Students will put on respective attire in staff

changing room / in their respective hostel prior entry to the department. They will be required to change on entry and leaving any clean/procedural areas. They will report to person in charge and will be instructed on their day/week's tasks. Lecture input/demonstration/teaching will be done at bedside or seminar room provided.

4. Relatives' Flow

Relatives accompanying patient will assist patient in the registration process and payment for the patient at the main reception counter;

Relatives will monitor patients while under observation and keep the belongings of the patient as patients undergo treatment.

Relatives may utilized relative's wait and public facilities for comfort.

5. Materials Flow

Materials wills be supplied through a service/non-public entrance to be stored in the respective stores. CSSD items for recycling will be returned to CSSD.

Linen will be held in the Linen Store Room.

Sterile items and disposables will be kept in the General Store Room. Instruments trays and other O.T items will be passed via the transfer zone of the O.T into the Sterile Store Room of the Emergency OT. CSSD and

Pharmacy supplies will be delivered to the Clean Utility Room of the Emergency. The daily demand on all items will be drawn from these main storage areas and held in the respective treatment cubicles, procedure rooms and Emergency room on top up basis.

On discharge, patients may be given a small supply of necessary pharmaceutical, and a small dispensing cupboard will be provided for this purpose. But in general, patients will be issued with a prescription which they may collect at the Dispensary for Specialist clinics at the hospital.

CSSD items for recycling will be counted, bagged in the Dirty Utility Room, and held in the Disposal Room. All other waste items, including soiled linen will be put in color coded bags, held in the Disposal Room pending removal by centre porters.

b) FUNCTION OF SPACES

(i) Entrances

1. Ambulance/Entrance porch

Covered area for vehicle to deliver cases and to

transfer patients onto trolleys or wheelchair. A prominent place with beacon light and lighted signs. A separate ambulance drop off area preferably delivering patients directly without reversing is also to be provided.

Entrance porch must cover all the entrances of the various zones of the department. The coverage should ensure efficient flow of the patients/passengers getting off and on of vehicle especially in inclement weather condition.

There should be gentle ramps/gradual change of height from road to building proper to ease movement.

2. Entrance Lobby

Separate entrance is required for

2.1 walk-in patients

2.2 Ambulance/ serious cases/critical cases.

2.3 Paediatric case will have a separate resuscitation examination waiting area and play area.

2.4 Infectious disease

2.5 Psychiatric

2.6 Labour and Delivery (PAC)

3. Primary Triage area

It should be located in a prominent area at the

frontage of the department with sit-down counters/desks allowing easier communication with the public, direct viewing for immediate assessment of patients and to segregate patients according to the severity of their conditions. It should be placed between the two entrances of the red/yellow zones and the green zone. Monitoring of the two-way communications control radio system shall be done here.

4. Trolley/Wheel Chair Park

An area to park trolleys and wheelchairs is required. It shall be place separately from the waiting area but clearly visible from the entrance/drop off point. It should be located near the triage counter/area.

5. Splint Store

An area to store splints/ mobilisers. It should be placed within easy access of the primary triage area.

6. Emergency Equipment Store

It is a storage for emergency equipment including stretchers, gas cylinders, etc to be taken to disaster site. The store should be located with easy access to ambulance parking area.

7. Disaster Management Area

An area near the Emergency Department shall be designated for disaster management area. It is an open area that can be tarred or cemented but fully covered.. When not in use for disaster management, it can be used as car park for normal day usage.

This area shall be provided with infrastructure for patient's management during disaster e.g. lightings, power points, storage areas etc.

It will also be use or evacuation and assembly point.

8. Disaster management room.

A centre of activities of disaster management. It should be able to accommodate 20-30 people and equipped with communication accessories and network.

9. Radio control room / Communication and Dispatching Centre *(Annex Disaster Management Room).*

Communication area with two-way radio facilities from the Centre to the accident site, all the ambulance and emergency control centre. A fully computerized center with modern communication and **Telemedicine** capability for coordinating emergency care of the region.

10. Ambulance Driver's room.

A room for the ambulance drivers will be provided with space for briefing, roster, change of uniform, rest and pantry facilities.

11. Ambulance parking

Covered parking for ambulances on the go at main entrances and parking away from entrance with space for washing facilities are to be provided.

12. Porter's room

A room for porters to gather and wait for their turn to carry out errands dictated to them.

13. Public toilets

Male, female, nappy change and the disabled.

14. Breastfeeding Room

A dedicated room for 2-3 mother to breastfed their child in privacy will be provided. A wash hand basin, chairs and sofa should be provided. The facility should be next or adjoin nappy change area.

15. Musolla & ablution

A space for respite for 20-30 persons with separate entrance, ablution and shoe racks for male and female users. It should be disable friendly.

16. Trolley/wheelchair park

For the trolleys and wheelchair so that there will be no obstruction to the waiting and circulation spaces.

17. Police Based

Police based with an enclosed waiting area will be provided. A rest area, toilet and pantry facilities should be provided ensuite.

(ii) RESUSCITATION AREA (RED ZONE)

Decontamination room

It is a room for patient bath and shower to decontaminate chemicals and poisons. There must be direct access from the ambulance drop-off area as well. It will then have direct access to the resuscitation room. The space must be sufficient to transfer the patient from the ambulance trolley onto a shower trolley and clean, dry and change the patient. It must be located away from the public passage. It should also be designed to cater for the management of infectious disease.

(iii) Resuscitation Bays

It is for the RED ZONE activities:

1. Critically ill patients arrive on a trolley escorted by up to 4 staff. They may have already commenced resuscitative procedures. Here resuscitative procedure may continue further or may be started.
2. All round access to patient will occur. There will be

use of overhead rail for suspending IV fluid containers during infusion, use of mobile x-ray machines, assessing x-ray films on one of the walls with 4-in-1 x-ray viewer panel, writing patient notes, storing sterile supplies/equipment, clinical hand washing and parking of trolleys.

3. 10 cubicles with each cubicle requires ceiling or wall mounted examination lamp, appropriate equipment, medical gases and vacuum suction pendant; socket outlets for resuscitation equipment such as ECG with defibrillator, suckers, etc. Each cubicle will be equipped with continuous monitoring apparatus for critical patients, 2 way communication tools, built cabinets to store various instruments, drugs and disposables as well as a clinical hand wash basin.

4. It is an open space for 7 adult beds, 2 paediatric beds, and 1 burn bed with burn bath facilities. The area will be equipped with intensive care facilities, one ceiling mounted X-ray with track to all beds and lead screen. The paediatric patients to be secluded from view of adult patients.

(iv) Staff Based at Critical /Red Zone

It is a workstation located at the centre of the nursing area with patient monitoring system. The based will be equipped with facilities for administrative work, communication centre with phones and alarms. Emergency/Crash cart as well as record trolleys are

placed here.

(v) Relatives' Waiting Area

A waiting area with ensuite toilet for family members of 10 - 12 people should be provided while their family members are in the red and yellow zone area. Beverage, public phone and a musolla should also be provided nearby.

(vi) A Musolla

A Musolla, with a screen space for female, as a place for respite, for 8-10 persons at one time with ablution will be provided within the RED ZONE. Separate ablution and entry for male and female. Disable friendly and secured.

(vii) Procedure Area

1. Procedure Room 1

1.1 Capable to do more complex cases and minor surgery including circumcision. An emergency surgery can be carried out in this room. OT table and light shall be equipped here and sterile environment can be maintained. A pendant system (such as at Resuscitation Bay) with oxygen and suction wall delivery systems must available here. Emergency Trolley/ cart, cabinet and dressing trolley shall also be provided.

1.2 Changing Room for the staff should be available also (OT type). It will allow the staff (male

and female) to change into OT clothes if there is an emergency surgery.

1.3 Scrub Room/ Area

It should be provided adjacent to this procedure room.

2. Procedure Room 2

Another room will require a dental chair for dental and ENT procedures with ceiling mounted examination light. Anaesthetic gas outlets as in OR must also be provided. A compressor room for the running of the dental procedure adjacent to the procedure room is required.

(viii) X- Ray Bay

Space to locate mobile X-ray should be located between red and yellow zone. Most are utilized in the RED ZONE.

(ix) Acute Laboratory bay/Stat Lab

The area will hold Blood Gas analysers and also need facility for simple tests such as urine and blood sugar test. It should be placed in the RED ZONE.

(x) Clean utility

A variety of supplies for clinical purposes are received and stored in this room. Parking space for dressing trolleys and storage space for trays are to be provided. Trolleys in use in C/E rooms, treatment rooms and

Procedure Rooms are prepared here. The space requires storage for sterile items, safe keeping of drugs, intravenous infusion packs and refrigerators for drugs and blood packs in appropriate condition. A clinical handwash basin is required for hygiene.

(xi) Dirty utility

A room for cleaning of used articles, dressing trolleys, disposed of liquid waste, cleaning dressing trolleys and temporarily holding items requiring reprocessing, disposal or stored prior to dispatch to disposal holding area, etc. Bedpans, vomiting bowls and urinals are kept here. A bedpan washer/flusher disinfector should be provided. Gross wash of CSSD items for recycling will be carried out here. Separate clinical hand washing facilities should be provided apart from general washing basins. Adequate storage, drying and safety garment area should also be provided.

(xii) Linen bay

Linen storage for resuscitation area.

(xiii) Staff Toilet (male & female)

Separate Male and female toilet with disable and shower facilities.

(xiv) Cleaners Room

This room is for cleaners to clean their mops and to store their cleaning tools. It requires dedicated cleaner’s sink and hook to hang the mops, brooms etc., and a shelf to put the detergents or other small items. Disposal of dirty water is through cleaner's sink. Exhaust ventilation is required.

c) INTERMEDIATE (YELLOW ZONE)

(i) Subwait

For patients and accompanying relatives, most probably from the GREEN zone awaiting treatment to treatment room/cubicles/procedure room. There should be allowance for wheelchair and stretcher trolleys. Other facilities such as toilets should be nearby. Environment should be kept pleasant. Health education should be provided indirectly here.

(ii) Treatment Cubicles /Area

Sixteen (16) open cubicles with each cubicle requires ceiling mounted examination light appropriate equipment, oxygen and vacuum suction outlet; socket outlets for equipments e.g. ECG with defibrillator; suckers, etc. Built in cabinets for storage of various instruments, drugs and disposables are required in each cubicle. Adequate hand wash basin is required for this area at regular intervals depending on the probable arrangement of the space. There should be allowance for mobile X-ray and emergency procedures. Visual privacy should be considered in the layout.

(iii) Staff/Nurse Base

A dedicated staff/nurse based for the YELLOW ZONE is provided to assist staff with administrative work and communication. Emergency/Crash cart as well as record trolleys are placed here.

d) Clean utility (as above)

e) Dirty utility (as above)

f) Procedure room (as above)

g) Plaster of Paris (POP) or Plaster room

This room is for application of POP or opening of POP. Common activities are:

1. Patient may arrive on foot, in a wheelchair or on a stretcher trolley and then may be transferred to a treatment trolley.
2. The staff will examine the patient. The patient may need to wash the affected body area before application or after existing POP is taken off.
3. There will be activities such as viewing of at least two (2) X-ray film at a time on a 2-in-1 viewer near the POP couch, scrub-up and gowning by the staffs, preparation of plaster for application on a plaster trolley under/no local general anaesthesia not requiring OT facilities and removal of plaster from the patient's body, recording of patient data and storage of drugs, anaesthetic sundries and equipment. Area for plaster wash to clean dirty limbs before plaster application must also be provided. Space for two (2) couches and POP trolley is required. X-ray viewers with digital viewing of images capability should be provided.

h) Plaster store

It is for storage of plaster and splints and to be attached to the Plaster of Paris (POP) room.

i) Treatment Room (2 nos)

This room is mainly to carry out injections of intra-muscular injections and simple dressings. Patient may arrive on foot, in a wheelchair or on a stretcher trolley for medical examination and assessment in privacy. The area must be sufficient for patient to undress with/out assistance within the curtain cubicle. Recording of patient data will be done outside the cubicle to allow privacy to patient to dress up after examination/procedures. There will also be assessing x-ray films, temporary holding records on clipboard, storage of stationery, disposal of soiled dressings into a clinical bucket and clinical hand washing outside the cubicle.

j) Asthma Bay

This bay is dedicated for the management of asthmatic patients. It is situated between YELLOW and GREEN zone. This bay will be managed by a medical assistant /doctor in charge. This bay should be fully furnished with comfortable furniture, piped-in music, good ventilation, and with a good view making it a very conducive environment for relaxation.

Space for six (6) patients equipped with medical gas, nebulisers, couch, special asthma chair, refrigerator and washing facilities.

Health education should be provided indirectly here.

k) WALK IN AMBULANT (GREEN ZONE)

This zone is stable cases with minor medical trauma injuries.

The cases will be triaged by medical assistants before being examined by medical officers in consultation and examination rooms. Patients will be ushered to treatment zones located within YELLOW zone for further management if required.

1. Reception, registration and office area. Common activities here are:

1.1 Reception and registration counter with 2-3 staff at sitting level.

1.2 4-5 persons can sit at the counter for services

1.3 Office and clerical work

1.4 Storage for records, files, stationery

2. Records Room

To be in-line with the hospital central record system and adjacent to the registration counter.

3. Main Waiting Area

The main waiting area will be an open space in which 80-100 ambulant patients and escorts may wait. A children's waiting/play area is required. Public amenities such as public telephone, vending machine, Automated Teller Machine (ATM) and health education corner to be provided. A breast-feeding room for lactating mothers (3-4 person) with nappy change and washbasin is required, near the waiting area.

4. Second Triage

Two (2) secondary triage rooms shall be provided to screen GREEN zone walk in patients. The rooms shall be equipped with equipment and facilities similar to consulting/examination room. A sub-wait area for 4-6 persons and registration/reception table will be provided with allowance for wheelchair, stretcher bed patient users. Triaging will be done by medical assistants. Privacy should be prevalent.

5. Consultation/Examination Area

5.1 Nurse base

Reception and reception purposes. Facilities for administrative and monitoring work should be provided.

5.2 Consultation/Examination (C/E) rooms

Six (6) C/E rooms will be provided where patients will be interviewed and examined in private. C/E equipped for Dental, ENT, Opthalmology will be provided here.

Common activities are:

- Patients arrive by foot, in a wheelchair or on a stretcher trolley for medical examination and assessment in privacy.
- Patient may undress with/out assistance within the curtain cubicle. Privacy will be required.
- Doctors/paramedic will carry out examination

and treatment within the cubicle with a chaperon. Sufficient curtain cubicle size within C/E is required, i.e. minimal of 1.5m x 2.4m.

- Recording of patient data will be done outside the cubicle to allow privacy to patient to dress up after examination/procedures. There will also be assessment of x-ray films on a fixed to wall single x-ray view panel, temporary holding records on clipboard, storage of stationery, disposal of soiled dressings into a clinical bucket and clinical hand washing outside the cubicle.

Each room will be designed and furnished accordingly.

6. Pharmacy

To dispense drugs for emergency cases adjacent to registration counter.

l) PAEDIATRIC EMERGENCY CASES

Paediatric emergency cases will be examined and treated in separate dedicated rooms with a pleasant environment.

1. Paediatric waiting area

A separate area away from adult, bright and cheerful environment for children to wait with parents/relatives prior to examination.

2. Play area

An area for children to play. Design as annex to paediatric wait. Area with a bright or pastel coloured walls with murals and pictures/photograph to calm paediatric patients and reduce their anxiety.

Admission for paediatric patients will be administered separately.

m) ONE STOP CRISIS CENTRE (OSCC)

Treatment and counseling for specific conditions requiring privacy like rape, and domestic violence will be carried in dedicated private examination rooms (one-stop crisis center).
It comprises of a C/E **with en-suite shower and toilet and an attached lounge. Another discreet entrance, into the attached lounge area must be provided**. The lounge shall be able to hold five (5) persons on single settee chairs. The lounge is for the police escorts, social workers or the relative of the patients to wait while doctors carry out examination in the C/E.

n) INFECTIOUS DISEASE /PSYCHIATRY/SECURITY UNIT

To be located with own vehicular access from outside and dedicated corridor to isolation/secured wards if admitted.

2 C/E will be provided with separate waiting, registration and toilet area. The unit special ventilation requirement, design and located away from the general patient traffic.

o) DEAD ON ARRIVAL

(i) Deceased Body Holding Room

Patients who are dead on arrival or who died in the

department will be kept in special designated area in the department prior to being taken to the mortuary.

The room needs space for two trolleys at a time with seating for 8-10 people. Racks to hold Yasins and Al Quran will be provided.

A clinical hand wash basin to be provided with accessories.

(ii) Grieving Relative Wait

A waiting area/lounge with ensuite toilet for family members of 10 people should be provided in supportive environment while their family members are in the red and yellow zone area. Beverage and public phone area should also be provided nearby.

Racks to hold Yasins and Al Quran will be provided.

(iii) Mussola

Adjacent to grieving wait room with ablution.

p) OBSERVATION AREA / WARD.

(i) Observation bed bays

There should be provided with four (4) bays with 4 beds per bay (16 beds)

(ii) Nurse base (refer Ward brief)

(iii) Clean utility (refer Ward brief)

(iv) Dirty utility (refer Ward brief)

(v) Patient's toilets

To be provided at each bay (male/ female with disable

friendly facilities).

The ward should have view to the outside or nature for lowering anxiety.

(vi) Pantry

Meals and beverage will be prepared here for patients in the observation bay.

(vii) General store

Storage of items from folding chairs, paediatric care accessories, stationeries, etc for the observation ward.

(viii) Equipment Room

With facilities for charging of electrical equipment.

(ix) Linen bay

Storage of pillows, pillow cases, bed sheets and others with good ventilation system. Replenish system refer Whole Hospital Policies.

(x) Acute laboratory bay (Blood Gas Analyser)

To be provided as an enclosed bay/counter near staff based.

q) EMERGENCY RADIOLOGY UNIT

(i) Sub-wait

Sub wait for ambulant and non ambulant patients with accompanying relatives.

(ii) Public toilet

Public toilet for male, female, disable, nappy change to be provided

(iii) Reception area

Reception cum staff based to register/record patients attending the unit. All communication channels happen here. There should be direct access to office and staff areas from here.

(iv) Changing cubicle (male & female)

Two (2) pass through changing cubicle to general x ray room is required. Facilities for seating, hanging of clothes and personal items should be provided. It should be secured from the outside and radiation safe from the inside.

(v) General X-ray room

(Refer RADIOLOGY Dept brief)

(vi) Control/Viewing area

(Refer RADIOLOGY Dept brief)

(vii) CT Scan room

The facilities should accommodate a CT scan, related control and computer area, a subwait and changing/toilet facilities for the patients.

(viii) Image processing area

For digitiser, cassette reader and laser printer

(ix) Report room/ Office

(x) Radiographer's on-call room

(xi) Ultrasound Room

(with 1 Change Room cum toilet/disable friendly).

(xii) General store

(xiii) Equipment Room

(xiv) Staff toilets (male & female)

(xv) Staff rest room & pantry

r) EMERGENCY OPERATING UNIT

(i) **Relatives waiting room** and Ensuite toilet

(ii) **Staff changing room** (Separate male and female change room including toilets and lockers).

(iii) Transfer zone/air lock

Space for stretchers and warming cabinets for blankets. All supplies for theatre will pass through this area.

(iv) Holding bay for two (2) patients

(v) Staff Based

(vi) Operating Room (ORs)

Two (2) standard ORs for surgical interventions on emergency including neurosurgery and orthopaedics surgery will be provided fully equipped with high resolution monitors and others.

(vii) Anaesthesia/ induction room

(viii) Sterile lay up/preparation

Equipped with flash steriliser and back up sterile packs.

(ix) Scrub-up area

(x) Wash-up/preparation

(xi) Plaster room

(xii) Mobile X ray bay

The space should be able to accommodate one mobile C-arm X-Ray machine parked for recharging.

(xiii) Plaster store

(xiv) Recovery bay

A holding area for four (4) post-operative patients on trolleys. It will be equipped with medical gas panel and patients monitor.

(xv) Clean utility

(xvi) Dirty utility

(xvii) Stores:

1. Equipment
2. Sterile
3. Linen
4. Suture
5. General.

(xviii) Cleaner's room

(xix) Doctor's room

(xx) Staff rest including pantry facilities

(xxi) Musolla (male & female)

(xxii) Sister's office

(xxiii) Seminar room

(xxiv) Disposal hold

s) ED STAFF AREAS

(i) ED General Office

Head of Department (Consultant Specialist) with personal assistant area and waiting area. General office for four (4) personnel, store, pantry, discussion space.

(ii) Doctor's office

For the doctor to write reports, rest, interview relatives, hold discussion.

(iii) Medical assistant's office

For the day-to-day management by the Medical Assistant in-charge.

(iv) Sister's office

For the day-to-day management by the sister in-charge.

(v) Staff rest room with pantry facilities (2nos-1 male, 1 female)

It is for staff to have their short break and meals during working hours. It shall be able to cater for 8 people; 4 at a dining table and 4 at the single settee chairs at a time. The settee will have one coffee table. Worktop is needed to hold a kettle, a microwave oven, a single bowl-single drainer kitchen sink and space for making drinks as well as lay plates for warming foods using the microwave oven. Overhead and under bench cabinets are to be provided. A refrigerator will also be located here.

(vi) On-call rooms (4nos)

A single-bedded room with attached bath room/toilet, and equipped with built-in wardrobe, dressing table, writing table, TV, ‘C’ line telephone and table lamp.

It will be adjacent to the resuscitation bays for easy and direct access on emergency calls.

(vii) Seminar room

A seminar room to accommodate 15 - 60 people and equipped with overhead projector, flip chart stand, table, screen, x-ray viewers and stationary cupboard, TV, connection to CCTV, internet and AVA facilities is to be provided. It shall also function as meeting/teaching/discussion room and part of disaster management room.

(viii) Skill laboratory

For clinical skill training of staff and students in emergency medicine.

1. Staff changing room (Male& Female)

It is for the staff to change footwear and street clothing. Facility for wash up/take bath after their shifts and to keep their personal belongings in their personal lockers shall be provided. 10 two tiers lockers (20 units) will be provided for each gender. Entrance to change room will be through an ante-room; to actual changing areas/cubicles. Each cubicle will have a long dressing mirror, socket outlets. Toilets and shower facility shall be provided.

2. Mussola (male & female)

3. Staff toilets (male and female)

(ix) SUPPORT/ ANCILLARY ROOMS

1. Cleaner's room

2. Disposal room

This room is to hold clinical waste and domestic waste while waiting for collection by the private support services. It is preferred to have two (2) entrance from both sides so that waste collection services do not enter the department for collection.

3. PACS Workstation

4. Stores :-

- General
- Equipment
- Sterile
- Linen (store) - Supply of clean linen will be held on carts in built-in cupboards. Storage for pillows can be on overhead shelves.

(x) PREGNANCY ASSESSMENT CENTRE (PAC)

A centre for assessment for pregnancy-related problems including pre-labour assessment. It should be located at ground floor with easy access to labour room/ labour delivery unit on the upper/lower/same floors through dedicated lift/corridors with patients' privacy honoured.

1. Sub waiting area

For spouse/accompanying relatives with public facilities –toilet, phones, vending machines and trolley park.

2. Security post.

3. Registration area

4. **Record room**
5. **Staff based**
6. **Consulting / Examination Room (1 nos)**
7. **Patient changing room, toilets & lockers**
8. **Patients' lounge**
9. **Assessment bed cubicles**

   Ten (10) beds are required with medical gas and socket outlets equipped as per normal delivery.
10. **Baby resus area**
11. **Ultrasound room (refer LDU)**
12. **Clean utility (refer LDU)**
13. **Dirty Utility (refer LDU)**
14. **Stores**
15. **General store**
16. **Equipment Room**
17. **Linen Bay**
18. **Toilets (staff & patients-male & female))**
19. **Staff Change (Male & Female)**
20. **On Call room (2 nos)**
21. **Staff rest and pantry**
22. **A Mussola (staff & patient)**
23. **Trolley park (inside centre)**

(xi) HELIPAD

A helicopter landing site should be accessible to the department and equipped with landing lights. Refer DCA on engineering and landing requirements.

5.1.1.7 MANAGEMENT & HUMAN RESOURCE (STAFFING)

The department will operate on 24 hour a day basis. The Consultant Specialist in Emergency Medicine will be the doctor in charge while Senior Medical Assistant will be the supervisor.

Staff norms to follow latest guidelines, including shifts for reliefs.

5.1.1.8 APPLICATION OF WHOLE HOSPITAL POLICIES

a) Patient/Staff/Student/Visitors
(Refer WHP)

b) Logistic (Porterage and Transport)
(Refer WHP)

c) Food/Catering

Staff may prepare and take meals in the Staff Rest Room. Patients in the observation ward will be served with beverages for which a pantry will be provided. Patients/visitors/relatives will have access to vending machines / 24 hours cafeteria for food.

c) Linen
(Refer WHP)

d) Security Services

(Refer WHP)

f) Cleaning and Housekeeping Services

All general domestic cleaning will be undertaken by the central housekeeping department. The Unit attendant will have general duties e.g. sheet changing, linen rinsing, bed pan cleaning etc. and be responsible for the cleaning of accidental spillage's. The cleaning of medical equipment will carried out daily by paramedical staff.

g) Sterile Supplies

Sterile items will be delivered by the CSSD pottering staff directlyto the user areas (e.g. OR, Clean Utility Room, Resuscitation Room)

h) Pharmaceuticals

The Department will be supplied on indents by Pharmacy staff. Pharmaceutical will be delivered by trolley direct to the Staff Base where staff will check the items, signed the form sheet and deliver them to the respective rooms.

i) Medical and Non Medical Supplies and Storage

Medical and non- medical items will be supplies on a top-up basis. They will be delivered by trolley direct to the respective store rooms. Surgical instruments will be supplies by the CSSD on an exchange basis.

j) Disposal and Waste Handling

Bagged refuse, used linen, recycling CSSD items and sealed "sharps" containers will be held in the disposal rooms for removal by the Central pottering staff.

5.1.1.9 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

Generally refer latest Engineering and Clinical Requirement /guidelines.

a) Air-Conditioning and Ventilation Requirements

(i) General Areas

1. Non-recycled airflow is required in the resuscitation, asthma bay areas and infectious disease emergency unit, for the staff and patients safety. Biohazard condition may arise from inhalation of infected air, caused by non-diagnosed patients bearing air-borne diseases.

2. The whole department is air-conditioned except for toilets, general store,' disaster' store, linen bay, cleaners' room and disposal holding room. Good ventilation is required for these rooms/spaces.

(ii) Procedure Areas

25 hrs a/c areas applies (refer Engineering Guidelines)

(iii) Operating Unit

24 hrs a/c. (refer Operating Department brief-Engineering requirement) except for toilets and general stores which are mechanically ventilated**.**

(iv) Radiology Unit

24 hrs a/c (refer Engineering guidelines)

b) Medical Gases

c) Electrical Supply

d) Lighting

e) Communications (including ICT)

f) Water Supply system

g) Drainage System

h) Fire Fighting and Protection/Prevention

i) Other Miscellaneous

5.1.1.10 SPACE PROVISION

As per suggested “Schedule of Accommodation” in the Appendices.

5.1 OUTPATIENT SERVICES

5.1.2 SPECIALIST CLINICS

5.1.2.1 FUNCTIONAL DESCRIPTION

a) The specialist clinics will provide

(i) consultation and examination, diagnosis and treatment of patients who require specialist care;

(ii) follow-up and monitoring the condition of referred and discharged patients.

b) Patients will be referred by means of appointment from the following sources:

(i) Primary care clinics/ MoH Klinik Kesihatan/private clinics

(ii) Other hospitals (MoH/Private)

(iii) Others

c) Cases may be admitted directly to the ward from the specialist clinic or as elective cases whereby appointment will be made for the patient to be admitted on a given date.

Cases discharged from the wards may need follow-up at the specialist clinic of respective discipline or at the Primary Care Clinic.

d) There are 16 main clinics in the hospital such as the following:

i. Internal Medicine

ii. Cardiology & Cardiothoracic
iii. Dermatology
iv. Psychiatry
v. Nephrology & Urology
vi. Obstetrics and Gynecology, including
vii. Fetamaternal Unit
viii. Peadiatric
ix. General Surgery
x. Orthopaedics
xi. Dental and Maxillofacial Surgery
xii. Ophthalmology,
xiii. Otorhinolaryngology & Head and Neck Surgery, (ENT)
xiv. Neurology &Neurosurgery
xv. Dietetics
xvi. Oncology
xvii. Anesthesiology

Additional space for future expansion is to be provided for growth of new discipline as the sub specialties are introduced in the curriculum as specialization

e) Cases requiring laboratory investigations will be sent to the clinical laboratory or specimen taking room of the clinic. Only specimen sample will be sent to Pathology Department. **Accessibility of patients to the department only limited to the Blood Bank for blood donation.**

f) Special examination and diagnostic procedures e.g. pulmonary function test, ECG, plaster application, etc. shall be conducted as far as possible in the clinic. Facilities for these shall be provided at or as close as possible to the related clinics.

g) The specialist clinic shall provide education to the public especially on organ donation, healthy lifestyle and others.

5.1.2.2 PRIVATE SPECIALIST CLINIC WING

a) Private wing of the clinic will address private paying patients. There should be no disparity between paying and non paying /private or public facilities except for those stated in the agreement/private healthcare facilities act.

b) Access/main entrance, reception, records, staffing and waiting area is separated from public patients.

c) The private wing is connected through general circulation.

d) Staff may access both areas on functional basis.

e) Dedicated C/E room where possible will be provided for the private patient.

f) Treatment areas are shared between private and public patients. Private patients may be provided with a private wait at each clinic with facilities.

g) Private patients have access to own pharmacy dispensing services off their waiting area.

h) All areas are designed for disable friendly.

i) Areas where private patients are accommodated will be with better finishes and furnishings.

5.1.2.3 OPERATIONAL POLICIES

a) The specialist clinics will operate on staggered appointment basis. Registration medical records and billing will be done centrally. Appointments will be made at the respective clinic reception counter.

b) The medical record and information system will be in accordance with the total hospital information system. Other operational policies will follow the whole hospital policies.

c) Apart from the listed specialties clinics in 4.5.2.3 (b), the anaesthetic department will also run a combined clinic with the surgical disciplines for the assessment of the pre-operative cases.

5.1.2.4 WORKLOAD

Workload is determined on projected attendees on daily basis by appointment and projected referrals to all clinics by time spend per patient as required by the curriculum to the number of medical personnel /clinics/ specialisation available.

Overall workload of the clinics is estimated to be about 500-600 /day. The load will be mainly reflected on medicine, orthopedics , surgery , O & G , Ophthalmology and remaining comprising of ENT, Dermatology, Dentistry, Psychiatry and tertiary care clinics such as gastrointestinal Medicine, cardiology.

The Specialist Clinics will also provide central facilities for special examinations (e.g. ECG, Stress, Testing, Pulmonary Functions). Satellite Outpatient Pharmacy and Radiology Unit will, if away from main department, be incorporated in the Specialist Clinic.

In order to allow for sufficient capacity in accordance with the clinics' schedules, following utilization of the Clinics Units is proposed:

1. Internal Medicine
2. Cardiology & Cardiothoracic
3. Dermatology
4. Psychiatry
5. Nephrology & Urology
6. Obstetrics and Gynecology, including Fetamaternal Unit
7. Peadiatric
8. General Surgery
9. Orthopaedics
10. Dental and Maxillofacial Surgery
11. Ophthalmology,
12. Otorhinolaryngology & Head and Neck Surgery, (ENT)
13. Neurology &Neurosurgery

14. Dietetics
15. Oncology
16. Anesthesiology

A separate Office Unit for the Academic Consultants will be provided for the resident and visiting specialists. They will not have their offices within the Clinics Units. They will utilized the C/E rooms for clinical sessions.

5.1.2.5 LOCATIONAL FACTORS

a) Priorities

The specialist clinics need to:

(i) be located in the Outpatient Zone with its own main entrance with direct access from main entrance/drop off points.

(ii) Have Clinic Units where the disabled, orthopaedic, antenatal and postnatal cases, children and cardiac cases attends preferably be located on the ground floor/floor with direct access from drop off points;

(iii) be access via the main hospital street from the main lobby of the hospital;

(iv) be adjacent and direct access to the Radiology Department; especially for the Orthopaedic Clinic;

(v) have a dedicated clinical laboratory

(vi) adjacent or with easy access through hospital street to Outpatient Pharmacy unit without criss-crossing the patient flow;:

(vii) have certain dedicated function room/areas be located in the related clinic unit.

(viii) Be accessible to ACC for referrals

(ix) Be accessible to admission unit for

(x) Be adjacent to the private wing for staff accessibility.

b) Departmental Relationship

The Specialist Clinic must be

(i) adjacent to Radiology Department

(ii) close to ACC, Admission, Rehabilitation Unit,

(iii) accessible to hospital street by general circulation; and

(iv) automated/linked on system for service and information to Laboratory

5.1.2.6 PLANNING AND DESIGN CONCEPT

a) The specialist clinics should be centralised in a zone, one building or area and will be on multi-user with appropriate combination of disciplines sharing a clinic unit. A Clinic Unit will have appropriate consultation cum examination (C/E)

rooms that is interconnected for ease of consultation, discrete staff movement and information delivery. The complex should be planned and design to provide conducive teaching/learning and healing environment to staffs, patients, visitors and students apart from its regulatory, clinical and procedural environmental requirements. Appropriate ventilation requirements should also be addressed to avoid sick building syndrome, provide effective infection control strategies, exercise smart energy conservation and able to ascertain constant comfort environment for the users and sensitive equipments. The clinic should be accessible with clearly planned way finding apart from signage labels to determine its various disciplines. As patient waiting time is the most stressing element of the clinic, good orientation, acclaimed positive distractions such as courtyards, scenic view, informal health education, access to refreshment and internet, comfortable waiting area, uncluttered and cheerful environment would be a welcome entity to users of the facility.

b) In view of the flexible and multi-user of the clinics according to schedule, electronic digital system or other effective system may be proposed.

The following combination of Clinic Units is suggested:

No	Discipline/ Clinic	Compatible Discipline
1	Internal Medicine, (Dermatology)	Internal Medicine (Respiratory)
2	Oncology	
3	Nephrology & Urology	
2	Cardiology & Cardiothoracic	
3	Obstetrics & Gynaecology	Paediatric
4	Opthalmology	Oto-rhino-laryngology (ENT)
5	General Surgery	Anaesthetic and Orthopaedic
6	Psychiatry	Neurology & Neurosurgery
7	Dental Surgery	
8	Dietetics	
9	Other	

c) The basis concept of the Specialist Clinics design is the provision of standard layouts/template, where possible, in order to allow for flexible usage by all disciplines. This will ensure both effective provision for the individual Specialist Clinic functions and highly efficient usage of the space. However , due to the specific requirements of the disciplines such as Orthopaedics (Plaster Room, POP Store) Obstetrics (Ultrasound Room) , Ophthalmology(Optometry Room , Visual Field

Testing , Laser Work and Procedure Room),ENT (Audiometry Room , Caloric Testing Room) , Dermatology (Photo-therapy Room, Dermatology Lab, Dark Room) there will be differences in the accommodation provided , between Clinic Units .

d) The Main Waiting Area and Reception should be directly accessible through Specialist Clinic's own entrance. The reception should be located so that the staff working there can see clearly patients entering the department and also oversee the main waiting area.

e) The Waiting Areas of all Clinic Units have easy access from the Main Waiting. The staff working in the Reception Counter of a Standard Unit should easily be able to see patients waiting and should have oversight of as many Consultation / Examination Rooms as possible. The location of the Waiting Area should allow for easy access to the Consultation/Examination Rooms as well as treatment rooms.

f) The Treatment Room; should be best positioned between the Clean and Dirty Utility Rooms with direct access for staff. This measure will also ensure a clear flow of clean and soiled items.

g) The Shared Facilities should be grouped together and located centrally so that they can be easily accessed from all Clinic Units.

h) The Radiology Unit Area should have its own Waiting Area. It should be segregated from the Main Wait for the Specialist Clinics in order to prevent congestion.

i) The central staff facilities should be located in fairly close proximity to the Clinic Units with own/discrete access. To allow for privacy of the staff it should be sited away from the main patient traffic circulation and in between the private and public wing.

j) Within the Specialist Clinics, natural light is desirable in waiting, working and staff rest areas.

k) The layout of Dental Specialist Clinic should allow for adjacency between the Surgical Treatment Rooms (Surgical Operatories), X-Ray Room and Preparation /Sterilization Room. Reception area should be located so that the nurse should be able to see patients entering the clinic. She should have good view of as many Treatment Rooms as possible. Recovery Room should be located away from public circulation.

l) Be close to and have direct access to the Radiology department, especially for the orthopaedic clinic, rehabilitation clinic and the nephrology/urology clinic.

m) Have a dedicated clinical laboratory.

n) The specialist outpatient pharmacy is to be located for easy access by patients without criss-crossing of patient flow.

o) Have certain dedicated function rooms/areas to be located in the related clinic unit.

5.1.2.7 WORKFLOW AND FUNCTION OF SPACES

a) WORKFLOW

(i) Description

1. Patient Flow

1.1. Patients enter the department through the designated clinic entrance and lobby, which is adjacent to the public car parks.

1.2 At the clinic, patients are registered and make necessary payment at the Main Registration Reception Counter prior attending respective clinics.

1.3 Patients who come on appointment basis, their medical records will be retrieved from the central medical record office a day before the appointment date. Once the clinic session ends the records will be returned to the records office.

1.4 The clinic waiting area should be sufficient to accommodate **100** chairs orientated such that patients can have clear view of the entrances to the consultation/ examination (C/E) rooms, treatment room and procedure room. Digital calling system or other and health education/edutainment system shall be made available.

1.5 After examination, patients may attend other procedures in other rooms/spaces in the clinic or other department within the hospital including:

- The treatment room.
- The procedure room
- The ECG room.
- Clinical Lab.
- X-ray department / etc

1.6 After being seen by the specialist, patients may collect the prescribed medication from the outpatient pharmacy and go home or admitted through the admission unit.

1.7 Private patients will access the clinic through designated entrance,

reception and waiting area.

1.8 Whole hospital policy on outpatient flows applies.

2. Staff Flow

2.1 Staff will come for work either from outside the hospital or from the quarters within the hospital compound.

They will go to a change room to put their personal belongings into their lockers or get changed into their uniform. Then, they will go to their appointed area as per their duty rosters.

2.2 Medical and para-medical staff from other Department of the Hospital will come to the Clinics in their hospital gowns/ uniforms. Therefore, there will be no need to provide changing facilities for these group of staff.

2.3 After duty, the staff may go to the changing room or to change back into their street clothes and collect their belongings.

3. Student Flow

As per staff in the department with specific clinical sessions conducted with consultant/peers as per training scheduled.

4. Relative Flow

Accompany patient to all areas permitted.

5. Material Flow

5.1 As per whole hospital policy (WHP). All supplies will be delivered directly to the respective discipline or clinic units

5.2 Sterile items will be drawn from CSSD and be brought to the Clean Utility Room where it will be checked by the Clinic staff and stored.

5.3 Pharmaceutical items will be brought to the Clean Utility room where it will be checked by the responsible Sister/Nurse and stored. Small quantities (for the daily demand) will be held in the Treatment Rooms.

5.4 All other items will be brought to and kept at the respective point of use.

5.5 Used recycling CSSD items will be collected in the CSSD containers in the Dirty Utility Room and transported to the Disposal Hold pending collection.

5.6 Soiled linen will also be collected in bags in the Dirty Utility Room and be brought to the Disposal Hold awaiting transport to the Linen Unit.

5.7 Waste will be assembled in separate colour coded bags in the Dirty Utility Room and be transported the Disposal Room for collection.

(ii) Workflow Diagram

b) FUNCTION OF SPACES

(i) SPECIALIST CLINIC MAIN ENTRANCE, LOBBY AND CENTRAL REGISTRATION

1. Main Entrance

Separate entrance is required for staff/students and patients/public.

2. Clinic lobby and Exhibition area

Including stores and resource centre

3. Reception and Central Registration

Reception counter is the sitting type counter. It will have 1 staff chair and 2 visitors' chairs. Patients with appointments will register and

/or pay here. They will be directed to the waiting area.

Medical Record for Outpatient Data storage

(ii) Main waiting area

The waiting area will have space for 80-100. The Main Waiting will provide space for patients awaiting direction or enquires as well as for relatives who are not accompanying patients to respective Clinic Unit. As waiting can be very long, edutainment and access to natural /nature /respite areas is required.

(iii) Children play area

Children playing area should also be provided nearby the main waiting area. Apart from outdoor play area, it shall also be provided with an internal play area. Children should be supervised by the caregivers/relatives.

(iv) Public toilet (male, female & disabled)

(v) Breast feeding and nappy change room

(vi) Trolley park/wheelchair park

(vii) Cleaner's room

(viii) Other basic amenities

Provision for vending machines for drinks, public telephones, ATM, etc.

(ix) COMMON AREAS OF EACH CLINIC UNIT

1. **Clinic reception and record rooms** for each clinic;

2. **Consultation/Examination Room**

   10 C/E rooms each with additional as requested**.**

3. Staff interconnecting corridor

   This shall be provided in all the C/ E rooms.

4. **Staff change (male & female)** preferably on each level;

5. **Staff toilet (male & female)**

   at each unit;

6. Patient and public toilets, breast feeding, nappy change

   Male, Female disable toilet, nappy change, and breast feeding room shared between 2 clinics or for every 30 persons

7. **Seminar room**

   For each clinic

8. Counseling rooms

   for each clinic

9. Venepuncture Room

   for each clinic.

10. Clinical Laboratory (a satellite laboratory)

linked/adjacent or by circulation easy access to the Pathology/Main laboratory

11. Equipment Room

One for each clinic

12. **Storage** for each clinic

(i) General store

(ii) Linen store

(iii) Equipment Store

13. Health education rooms

One for each clinic

14. Staff rest with pantry facilities

One for each clinic

15. Musolla with ablution (male & female)

For general public. Staff facilities is provided at work area separate at intervals.

16. Play room

Near waiting areas preferably at Paediatric, O&G and Medicine clinics)

(x) PROVISION PER CLINIC UNIT:

1. Reception and records

Reception Counter should be both disable friendly, approachable and pleasing. This will serve as the reception and an enquiry

desk. Investigation forms will be filled here. Retrieval of patient information through ICT application should be provided. The counter should allow space for two staffs. Temporary/Follow-up records are stored here pre-post clinic session.

2. Clinic Waiting Area

Approx. 80-100 waiting chairs per unit clinic is preferred. Preferably each unit waiting area is nearby /adjacent to each other as to optimise the waiting area. Space for wheel chair users and stretcher beds/where relevant should be provided. Infection control requirement applies.

3. Patient/Public Toilets

Public toilets for those attending the clinic shall be provided. It will be located adjacent to the clinic entrance as well as the waiting area.

4. Health Education area

It may be used for staff presentations or patient health education, demonstration and information

5. Physical assessment room

This room will provide facilities for history taking i.e. the patient to be weighed and measured and for other clinical measurements to be taken. Privacy

required. Specimen toilets will be provided where relevant.

6. Consultation / examination room

Ten (10) C/E rooms per clinic unit, equipped with office management system with desktop with access to

- OMS/Pathology
- Pharmacy
- Radiology

7. Venepuncture Room

8. Specimen Taking Room

This room is for taking specimens. Nurses will do the blood taking. Specimens toilet is to be provided.

9. Treatment room

This room is mainly to carry out injections of intra-muscular injections and simple dressings. Patient may arrive on foot, in a wheelchair or on a stretcher trolley for medical examination and assessment in privacy. The area must be sufficient for patient to undress with/out assistance within the curtain cubicle. Recording of patient data will be done outside the cubicle to allow privacy to patient to dress up after examination/procedures. There will also be assessing x-ray films, temporary holding

records on clipboard, storage of stationery, disposal of soiled dressings into a clinical bucket and clinical hand washing outside the cubicle.

10. Procedure Room

One procedure room are required i.e. for minor surgical procedures. It will have facilities similar to treatment room but it will have ceiling mounted examination light, scrub area and change facilities.

11. Clean utility

Drugs sterile supplies as well as medical supplies will be kept here. Other requirements are as per standard clean utility room.

12. Dirty utility

This room is for disposing of liquid waste, cleaning dressing trolleys, etc.; temporarily holding items requiring reprocessing or disposal; and storing. It will house bedpans, vomiting bowls and urinals. Gross washing of CSSD items for recycling will be carried out here. Other facilities include a separate clinical wash hand basin, stainless steel sink unit with slop hopper and stainless steel overhead shelving.

13. **Stores**

(i) Equipment store

(ii) Linen store

(iii) General Store

14. Office (Sister/MA)

15. Equipment Room

16. Subwaits

There should be decentralised subwaits in alcove or recessed areas close to point of use while patient wait for their turn. View to the outside/nature is required to ease waiting time. Space allowances for wheelchair users are required. Public/patient toilets should be nearby. Health education is indirectly provided at this area.

17. Staff Rest and Pantry

It is for staff to have their short break and meals during working hours. It shall be able to cater for 8 people; 4 at a dining table and 4 at the single settee chairs at a time. The settee will have one coffee table. Worktop is needed to hold a kettle, a microwave oven, a single bowl-single drainer kitchen sink and space for making drinks as well as lay plates for warming foods using the microwave oven. Overhead and under bench cabinets are to be provided. A refrigerator will also be located here.

18. Staff Toilet

Dedicated staff WC is to be located not far from the staff rest room.

Provision for separate gender, disable friendly and airlock.

19. Seminar Room

A seminar room to accommodate 15 people and equipped with overhead projector, flip chart stand, table, screen, x-ray viewers and stationary cupboard, TV, and AVA facilities is to be provided.

20. Breastfeeding/Nappy change Room

It is a small room for tuition on breast-feeding and nappy changing to new mothers as well as for lactating mothers to breast-feed their babies. The room will have space for four easy chairs, an occasional table, a wash hand basin and a padded worktop. It will be located where it allows mothers to move easily to and fro waiting area and the C/E rooms.

21. Cleaners

This room is for cleaners to clean their mops and to store their cleaning tools. It requires dedicated cleaner's sink (not kitchen sink) and hook to hang the mops, brooms etc., and a shelf to put the detergents or other small

items. Disposal of dirty water is through cleaners sink. Exhaust ventilation is required.

22. Disposal Holding

A place where all proceeds of the day are bagged into colour coded bags/containers. The disposals are kept for collection on regular basis, by the contractor. The room should be well ventilated and locked. Preferably to have separate access for depositors and collectors.

(xi) OFFICE SPACE FOR MANAGEMENT OF CLINICS

1. Consultant In charge's office
2. Sister Office /M A's Office
3. General Office with office equipment stationery
4. Meeting
5. Pantry/Staff Rest/Musolla

(xii) PRIVATE WING

1. Main Entrance
2. Reception & Records
3. Registration & payment
4. Waiting Area and Cafeteria
5. Public Toilet (male, female, disable,

nappy change, breastfeeding)

6. Health education
7. Counseling/interview room
8. Outpatient pharmacy
9. VVIP Waiting Area
10. Musolla
11. Stores
12. Cleaners

(xiii) ADDITIONAL REQUIREMENTS FOR SPECIFIC CLINICS:

1. INTERNAL MEDICINE

1.1 ECG room

1.2 Pulmonary function test room

1.3 Patient Resource Centre

Reading materials with audiovisual facilities

1.4 Waiting area separate for infectious disease with separate ventilation system.

2. CARDIOLOGY

2.1 Six (6) consultation/ examination rooms with desktop access to

- OMS/Pathology

- Pharmacy
- Radiology records

2.2 **One (1) Diagnostic room** for ABPM recorder and workstation

2.3 1 workstation with 6 recorders

2.4 **1 Diagnostic room** for Holter

2.5 1 Holter workstation with 6 recorders

2.6 1 King of Heart Workstation with 6 recorders

2.7 **1 Diagnostic Room** for Outpatient ECHO

- 2 Full spec High End Echo with workstation and TOE

2.8 **2 consultation rooms** for research activities

- 30^{o} /-5^{o} Freezers (1 each)

Centrifuge/Phlebotomy services

Desktop with OMS/Pharmacy/Radiology workup

2.9 **Research Filing Room**

1 filing room for research related activities

3.0 ECG Room:

In this room, central ECG facilities will be provided . There will be 2 such rooms

3.1 **Holter Room (2 rooms)**

Application of the patient's recorder and analysis of the 24 hours ECG's will be carried out here . There will be two rooms .

3.2 Echo- Cardiography (2 rooms)

Investigations of the heart activities by Doppler-Echocardiograph will be performed here

3.3 **Stress Tests :** - 2 rooms

Stress tests by Treadmill or Bicycle Ergometer will be carried out in this room . A Toilet with shower facilities will be attached to this room.

3.4 **Pace Maker Check room** - for the cardiology clinic will be provided here.

3.5 **Pulmonary Function Tests** :

Investigation of pulmonary functions will be performed in this room.

3.6 Recovery (Bay)

Patients may recover in this area after testing. Emergency drugs and resuscitation equipment will be kept here.

3.7 **Venepuncture Room** (Blood Specimen Collection) :

Two separate rooms will be provided for taking blood specimens from out-patients. The specimens will be sent to the Specialist Clinic Laboratory or Pathology Department for testing.

One of the rooms will be done to the Nephrology / urology clinic.

(xiv) DERMATOLOGY

Consultation room for general dermatology to be equipped with lamps, magnifying lens and footrest for feet examination. Room for paediatric dermatology to be designed with a pleasant environment.

Dedicated rooms are:

1. Phototherapy room

2. **Dermatology laboratory** is divided into three (3) sections:

2.1 Hensen's control laboratory, where staining smears is done and microscopically examined (e.g. smear for AFB, Lepromin test, Histamine test).

2.2 GUM (SID) laboratory with darkroom. Facilities for test such as VDRL, TPHA, gonococcal smears and

UFEME. A dark room equipped with dark field microscope and camera video, etc: This laboratory needs an attached toilet providing privacy for urethral smears to be taken.

2.3 Dermatomycology/Micro biology for staining fungal smear parasite identification, fungal culture and Tzanck smears.

3. **Procedure room** - for biopsy and surgical procedure.

4. **Contact dermatitis room/ Patch test room)** for performing or reading patch test. To include area for storage of specimen and allergens.

5. STD Lab

6. STD Smear Room

7. Micro/Dark Room

(xv) PSYCHIATRY

1. Separate **Psychiatry assessment room** for adult and children with one-way mirror for observation and interview. The rooms should be equipped with two-way communication and AV recording and monitoring equipment.
2. Counseling and Psychotherapy room (2 nos)
3. Outpatient Occupational Therapy Room (Psychiatry) for

group activity of 15 people.

4. EEG room (1 nos)

(xvi) NEPHROLOGY & UROLOGY CLINIC

1. **Specimen toilets** (male, female and disabled) linked to clinical laboratory.

2. Ultrasound room

3. **Procedure rooms** (2 nos).

(xvii) OBSTETRICS AND GYNAECOLOGY CLINIC (O&G)

All consultation/examination (C/E) rooms should be provided with medium range ultrasound machines each.

Dedicated rooms are:

1. **Ultrasound room** with high resolution colour doppler ultrasound machine. Toilet Ensuite/disable friendly.

2. History taking area.

3. **Specimen toilets** with discreet pass through hatch to the clinical laboratory.

4. **Day assessment area** – for day assessment of patient with poor fetal movement. To be equipped with CTG link

to central monitor at the delivery suite and consultant's room. 10 delivery beds to be provided.

5. **Procedure room** equipped with complete set of colposcope/ LEEP system and outpatient hysteroscope.
6. **Infertility laboratory (2 nos)**.

(xviii) FETOMATERNAL UNIT

1. C/E rooms (4 nos)
2. Counseling room (2 nos)
3. Procedure Room (4 nos)
4. Ultrasound room (1no)

(xix) PAEDIATRIC CLINIC

Dedicated rooms are:

1. Nappy change/breast feeding room
2. Children's play area
3. Children's development assessment room with one-way mirror, CCTV and two-way communication system.

(xx) GENERAL SURGERY

1. **Clinical examination rooms/** Consultation & Examination Rooms (C/E) will be equipped with standard

equipments/facilities

2. Treatment/Dressing room (1 no)

3. Procedure room (1 no)

(xxi) ORTHOPAEDICS CLINIC

1. **Plaster room** with attached shower, toilet and change room.

2. Plaster store

3. Procedure room

4. The C/E rooms to be equipped with X-ray viewer (3 screens in one horizontal row)

5. Plaster wash area

(xxii) DENTAL SURGERY CLINIC

1. 2 rooms with 2 dental units
2. Compressor and suction
3. Dental x-ray and processor area:

ntra oral radiography

4. Processing of films
5. Dark room.

(xxiii) OPHTHALMOLOGY CLINIC

1. The Ophthalmology Clinic will have five (5) Consultation/ Examination (C/E) rooms with

minimum 20sq.m each

2. The C/E should be allocated to the following one Consultant, 2 post graduate students, and 1 medical officer in the same clinic.
3. The consultant will have a separate cubicle within the clinic. All the rooms need to be `convertible dark rooms' with disable light and `black-out curtain' equipped with:
   - 3.1 Slit lamp with motorised table complete with accessories. (4 slit lamps per room)
   - 3.2 1 Direct ophthalmoscopes.
   - 3.3 Wall mounted Binocular Indirect Ophthalmoscope (BIO)
   - 3.4 Tonopen or table mounted air puff tonometer
   - 3.5 1 Medical grade computers per clinic
   - 3.6 Recline chair for BIO- examination in Retina Clinic
4. All rooms to be provided with :
   - 4.1 Sufficient plug points for other instruments
   - 4.2 Dehumidifiers and air-conditioned 24 hours.
   - 4.3 Air Filter with Hepar system, telephone lines and internet lines.
   - 4.4 Preferably to be connected to

uninterrupted power supply (UPS) or generator set for protection of lenses and machinery used.

4.5 integrated net working system so the consultant can access patient's record, investigations results from diagnostic rooms and eye photograph and through the network.

5. Dedicated rooms are:

5.1 Advanced Retina Imaging Diagnostic (20sq.m)

Consist of following instruments:

- Laser blood flowmeter
- Fundus photo non-mydratic
- Fundus photo with Fundus Fluorine Angiogram (FFA) and Indocynine Green (ICG)
- High Definition Posterior Optical Coheren Tomography (OCT)
- Hinderberg Retina Angiography II (HRA II)
- High Definition 3D Optical Coherent Tomography
- 3 D B-Scan
- Video Binocular indirect ophthalmoscope (BIO)

- Retcam III retina imaging system with 3 lenses
- AMD perimetry Preview PHP
- LCD monitor and computers for teaching.
- Emergency trolley and adjustable chair with castors for surgeon and fixed chair for patients

6. Examination bed/recline chair for BIO examination

6.1 **Laser Suite (lasers treatment room) (20sq.m)**

The rooms need to be `convertible dark rooms' with disable light and `black-out curtain' separate between the laser machines. Equipped with:

- Argon 532
- YAG laser
- Pascal laser
- VISULAS TRION, Red, Yellow, Green,
- 532s COMBI,
- VISULAS 690 Plus with LIO
- Minor OT table in this room for lying patient with LIO treatment.

- PDT
- Laser Dacryo Cysto Rhinoscopy (DCR) with Endoscopic 3CCD viewing system

6.2 Biometry and Anterior Segment Diagnosis (16sq.m)

This room will have the following instruments

- A scan contact and immersion
- IOL Masters
- Slit lamp with video and anterior segment photo recording system
- Specular microscopy
- Topography
- Visante OCT .
- CRS Master
- LCD monitor and computers for teaching.
- Confocal Scan Microscopy

6.3 Neuro-Ophthalmic and Glaucoma diagnosis (16sq.m)

Each instrument is separated with dark curtain. The Instruments are:

- Electrophysiology room ERG, EEG and VEP to test function, optic and retinal function with special chair and head rest. (Separate from the rest by thick dark curtain or wall)
- Hinderberg Retina Topography (HRT)
- Humphrey visual field
- Visante OCT
- HRT 3
- SLT
- Hess Chart Mapping
- Glaucoma diagnosis /GDX
- Visual field with frequency doubling technique/matrix
- With automated perimeter- Humphry Visual Field
- Goldmann Perimeter,
- Bjarrum screen
- Computer and Colour laser printer

6.4 LASIK suite (20sq.m) -

These rooms consist of Excimer laser and Femtosecond laser.

With double door, couch and doctor's chair. The Excimer laser equipment is large, about 1.5 m x 1.5 m in width, thus sufficient space to be allocated. The room needs to be painted at least 2 months before the equipment is brought in. There must be 1.5m – 2m space between the machine and the walls. The floor should not be carpeted.

6.5 Refraction Rooms (size 4 x3 m) - 3 nos

It should be near registration and counter in a brightly lit area. It should be equipped with low visual aids instruments needed by the optometrist.

Each room will have

- a refraction working station and Digital Acuity System
- Phorophter
- Autorefractor with keratometer.
- Trail lens set

7. Orthoptist room 1 (4 x 3 m)

Consist of Hess screen, synoptophore, etc. to test for squint.

8. Visual acuity and IOP room (3 nos)

The room will have

-Snellen chart

-Air puff non contact table mounted IOP

-mirror

9. Counseling room 1

For doctors and staff to give counseling and eye education on eye diseases, surgical procedure and genetic counseling services

10. Ophthalmology procedure room

For minor procedures to be provided with scrub-up, portable autoclave and gowning facilities in a clean environment with small OT table and high end operating microscope.

11. Observation area

Equipped with 6 Reclining chair for patient to rest and small nursing station

12. Seminar room & Meeting Room

With life surgery teaching system, audiovisual facilities and computers (max 30 peoples)

13. Ophthalmology clinic administrative office

For senior Medical Assistant and clerk complete with computers, photocopy machine, internet, fax and telephone

14 Special Registration counter

15 Research room-1

A special room to cater for ongoing clinical research trail

To keep research record- hard copy

Computer to keep research data

(xxiv) ENT CLINIC

1. Consultation/ Examination (CE) room (minimum 7 nos)

Should be located in a low noise level area

The C/Es for ENT will be equipped with the following**:**

- Workstation/treatment unit complete with surgeon & pt chair– 1 unit/CE room.
- Complete Endoscopic system inclusive paediatric & adult flexible scope and rigid endoscope + colour

printer(0, 30, 70 degree) – 1 system/ CE

- Microscope mounted to workstation – 1 unit/CE.
- Rechargeable Otoscope – 1 unit/CE
- Basic ENT instruments – 1 set/ CE
- Crocodile forceps – 3 different sizes
- Tilley forceps
- Metal suction tubes, various sizes – 5 tubes/ treatment unit
- Tongue depressor
- Nasal speculums – various sizes
- Tuning fork
- Jobson-horn
- Mc Donald elevator
- Siegle's speculum
- Laryngeal mirror
- Fish bone Foreign Body removal forceps
- Scissor
- Gallipots
- Portable vacuum suction- 1 unit/ CE

- Lumiview (magnifier glass)/ CE
- Audiometry equipment
- ENG machine & caloric test equipments for balance disorders
- Water inlet and outlet system
- Examination lamp
- ENT chair with motorized system or latest.

2. Adult Audiometry room (2 nos)

2 audiometry rooms with booth and control area. It needs to be sound proof and equipped with clinical diagnostic pure tone audiometry with speakers for free field audiometry. For adult audiometry room, it needs 2-way observation panel between audiology booth and control area.

3. Paediatric Audiometry room (3 nos)

For Paediatric audiometry room, paediatric free field testing items such as high frequency rattle, chime bar, drum, infantometer including a one -way mirror room for staff and parents.

4. Audiologist consultation room (2 nos)

5. Speech Therapist Room.

6. Speech Therapy (4 nos)

Provided with:

Equipment for audiovisual oral activity

- Tape recorder with speakers
- Microphone.

The room should be sound-proofed room for 20 persons, sufficient to accommodate patients who may be in wheelchairs, therapist and companion, and/or assistant speech therapist. The room should be lighted naturally and provided with a relaxing environment. The room needs to be acoustically treated and suitable for recording purposes and use of noise-sensitive equipment.

7. Procedure/ minor OT room

- With ENT Operating table
- Operating Satellite
- High suction unit
- Scrub and change area.

8. Ear mould Lab

9. Temporal bone lab

10. Balance Lab

11. Caloric Testing (vestibular function test room)

This room is used for calorimetry and electronystagmography. It does not require sound-proofing. It requires total darkness during operation. Equipment are screened from patient area. To be equipped with:

ENT revolving chair

- Plumbing for automatic calorie irrigation system
- Calorimeter for automatic calorie irrigation system
- Optical stimulation instrument
- Optical stimulation bar to be fixed to the wall (about 4 feet height)
- Programme controlled electronystagmograph recorder ENG recording with automatic calibration.

12. Cochlear Implant Room

A soundproof room equipped with calibration machine.

13. BSER room (2)

14. Treatment room

- 2 Portable vacuum suction
- 2 Microscope
- 2 (couch + 2 mobile stole)
- 2 trolleys complete with necessary instruments
- Ear biopsy forceps
- Crocodile forceps
- Scissors

- Jobson-horn
- Gallipots
- Metal suction tubes – 5 suction tubes/trolley

(xxv) NEUROLOGY & NEUROSURGERY CLINIC

1. Neurophysiology Unit

Neurophysiology Unit is one of the support services for the Neurology Department. It is desirable that this unit be located in the quieter part of the hospital, away from the crowd, lifts and heavy machinery that may interfere with test procedures. It may be used by neurology, neurosurgery, ophthalmology, ENT, orthopaedic, psychiatry and paediatric departments. This unit will have:

2. Electroencephalography(EEG)

Laboratory:

The 3 EEG rooms may be designed in a row and need to have natural lighting as well as lights with dimmer. An area for storage of inflammable material such as *ethanol, acetone and collodion* need to be provided. The EEG rooms need to be provided with video monitoring. Panic button and warning switch will be located inside the room. A lighted warning sign is required outside the door. The doors need to be large for easy

movement of patients on trolleys. Door closer and security lock to be provided.

3. Electromyography (EMG) room

An area for storage of chemicals is required in this room. The room need lights with dimmer as well as natural daylight. A lighted warning sign is required at the door.

4. Evoked potential room

A windowless room is needed for tests such as VEP/ERG. The room must be well ventilated mechanically. Lights with dimmer and a lighted warning sign are required.

5. Doppler/sleeping study

6. **Waiting areas** for patients on trolleys and wheelchairs.
7. **Recovery room** with 3 couches. Oxygen and suction are needed in this room. This room is to be designed such that it may be converted into laboratory when required.

8. EEG record room

For storage of EEG graphs

9. Work room

For maintenance and checking of electrodes, chloriding electrodes and others. Storage area for dangerous chemicals is required.

10. Head technician's room

Office as well as EEG reporting room and teaching room.

11. **Technician area** - open office.

(xxvi) DIETETICS CLINIC

Special requirement:

- Waiting area for 30 pax with reading materials and audiovisual facilities
- Record room
- Assessment rooms – Anthropometry (1) and Body Composition Analysis (1)
- Consultation rooms (6)
- Group counseling room (1) for 20 pax with ICT and audiovisual facilities

5.1.2.8 MANAGEMENT & HUMAN RESOURCE (STAFFING)

a) The Specialist clinics will have one Nursing Sister in charge who will be a Nurse Manager supported by Medical Assistants , Staff Nurses , Assistant Nurse , clerks and attendants .

1. A nursing sister is the administrator of the clinic. She has a dedicated office here.

2. Nurses and medical assistant mostly work as assistants to the doctors except at treatment room where they are responsible in giving

injections, performing wound dressings or administer medications to patients.

3. Attendants/porters will help to bring patients to and fro the clinic and other departments namely Imaging and Pathology. They will also send patients who need to be admitted direct from the clinic to the wards together with the nurses.

b) The Dental Specialist Clinic will be headed by a Dental specialist assisted by Dental Officers, Dental Surgical Assistants and Dental Nurse . Health Clerks, Dental Attendants and Dental Technicians will be part of the managerial structure of the Clinic.

c) The Outpatient Pharmacy/Dispensary staff will be provided by the Pharmacy Department.

d) Clinical lab will be managed by the Pathology Department.

5.1.2.9 APPLICATION OF WHOLE HOSPITAL POLICIES

a) **Catering** :

Staff will take beverages in the Staff Rest Rooms during the breaks .

b) **Cleaning and Housekeeping Services** :

Daily routine cleaning in the C/E Rooms and Treatment Rooms of the Clinics will be undertaken by the Clinic Attendants. Common areas , e.g . shared accommodation and circulation space , will be the responsibility of the central domestic staff , or will be privatised as will the major cleaning activities such as ceilings , walls , doors , windows, etc . Major cleaning equipment for this purpose will be kept centrally.

c) **Linen Supplies**

Clean linen will be supplied from the Laundry on a top-up basis .

d) **Medical and Non-Medical Supplies:**

Pharmaceutical supplies will be delivered from the Pharmacy directly to the Clean Utility Rooms on a stock top-up basis .

Other supplies such as stationary items will be delivered from theHospital Stores on a requisition basis.

e) **Sterile Supplies** :

Sterile packs will be delivered from the CSSD to the Clean Utility Rooms by central portering staff.

f) **Disposal and Waste Handling** :

Items for disposal will be assembled in appropriate colour coded bags in the Dirty Utility Rooms of

each Clinic Unit . They will be brought to the shared Disposal Holding Room pending removal

5.1.2.9.1 ENGINEERING & ENVIRONMENTAL SERVICES REQUIREMENT

5.1.2.10 SPACE PROVISION

*(Refer suggested schedule of accommodation in the appendix***)**

5.1 OUTPATIENT SERVICES

5.1.3 AMBULATORY CARE CENTRE (ACC)

5.1.3.1 FUNCTIONAL DESCRIPTION

a) The day care unit provides accommodation for patients requiring surgical procedures and medical treatments who do not need overnight hospitalisation. Day surgery and day medical should be in two separate areas.

b) Although patients are not warded as in-patients, the concept of "admission" is emphasized as proper admission procedures need to be carried out.

5.1.3.2 SERVICES PROVIDED

a) Day surgery under local and general anaesthesia.

b) Day (ambulatory) medical for diagnostic and treatment such as blood transfusion for haematology patients, cytotoxic drugs treatment, and others.

c) Endoscopy diagnostic and treatment procedure in OT and endoscopy rooms.

d) Surgical procedures and medical treatment for all the specialties in IIUM Hospital can be carried out in the day care unit.

5.1.3.3 OPERATIONAL POLICIES

a) ACC is a multi discipline unit functioning during office hours.

b) Patients will be assessed and selected pre-operatively by the respective clinics, and will be given relevant information and instruction prior to surgery/medical treatment.

c) Surgical procedure will be carried out in OT, endoscopy rooms and procedure rooms. Medical cases treatment and observation will be in a separate medical treatment area/zone.

d) Surgical patients will be observed till stable and recovered from anaesthesia in observation bay and observation ward, prior to discharge.

e) The total operating time per case should normally not exceed 60 minutes. All patients will be discharged by 5 p.m. while those who are not fit for discharge will be admitted to the ward of the respective disciplines.

f) Post-operative pain and discomfort should be adequately relieved after discharged.

g) All patients should be accompanied by relatives, who stay in the waiting room throughout the procedure. However, for pediatrics cases, the parent must accompany the patient during the procedure.

5.1.3.4 ORGANISATION

a) ACC is a free standing unit with its own building that has direct and easy access from outside.

b) A consultant surgeon will be selected to be in-charge of the unit. A nursing sister, will be overall responsible for

the day-to-day management of the unit.

5.1.3.5 PLANNING CONCEPT

a) ACC is a free standing unit with its own building that has direct and easy access from outside.

b) It needs to be located near an out-patient pharmacy or it should be provided with satellite pharmacy.

c) Area for medical, endoscopy and surgical area should be segregated.

5.1.3.6 SPACE REQUIREMENT

a) Entrance:

i) Entrance Lobby

ii) Reception/registration

iii) Waiting area for pre operative patient and relatives.

iv) Waiting area for post operative patient and relatives.

v) Public toilets (male, female & disabled)

vi) Satellite pharmacy

b) Examination Area:

i) Patient sub-waiting area.

ii) Consultation and examination rooms.

iii) Patients change rooms (male & female with lockers and toilets).

c) Wards (for surgical patients):

i) Ward bays

They should be designed as an open ward (with curtain screen) to ensure easy supervision. There will be 6 six-bedded bays (36 beds); 3 bays for male, 2 bays for female and 1 bay for paediatric cases with play area environment.

ii) Nurse base

iii) Patients' toilet (male and female)

iv) Clean utility

v) Dirty utility

vi) Pantry with warming up and beverage preparation facilities.

vii) Cleaner's room

viii) Disposal room

ix) Staff rest area

x) Stores:

- Equipment store
- Linen store

d) Operating Theatre:

i) Operation theatre suite (OT suite)

There will be five (5) digital OT suites with similar specification as the inpatient equivalent as well to accommodate the required equipment for the different specialties.

ii) Recovery area

It should be fully equipped with the required equipment such as resuscitation set, monitoring and ventilation equipment. It should be able to accommodate ten (10) stretcher trolleys.

iii) Staff change (for OT team)

iv) Transfer/air-lock area

v) Holding area for 5 trolleys

vi) Anesthesia induction room

viii) Exit bay

ix) Sterile lay-up preparation room (shared between two OTs)

x) Scrub-up area

xi) Wash-out area (shared between two OTs)

xii) Clean utility

xiii) Dirty utility

xiv) Stores:

- Sterile store
- General store
- Linen store
- Anaesthetic store

- Equipment store
- Plaster store.

xv) Mobile C-arm bay

xvi) Doctor's room

xvii) Sister's room

xviii) Staff rest area (adjacent to staff change)

xix) Staff toilets

xx) Cleaner’s room

xix) Disposal room

xx) Prayer Rooms (M & F)

e) Medical Care Area:

i) Sub-wait area for patients and relatives.

ii) Consultation / examination room

iii) Patient treatment bay

For medical care, patient treatment area will consist of 12 beds or reclining chair. This area will be utilised for patients who need blood transfusion, institute cytotoxic drugs, etc. This area needs to be pleasant with entertaining facilities like TV and piped music available.

iv) Procedure rooms

v) Nurse base

vi) Dirty utility

vii) Clean utility

viii) Pantry with warming and beverage preparation facilities

ix) Patient changing room with lockers and toilet facilities (male & female).

xi) Staff toilets (male and female)

f) Endoscopy Suite:

i) Staff base

ii) Trolley and bed wait (4 beds)

iii) Recovery and observation area (10 beds)

iv) General endoscopic rooms will be provided as follows:

- OGDS (4)
- Colonoscopy (2)
- Endoscopic room for ERCP (1)
- Endoscopic room for urology (1)

v) Endoscopic store/washing/sterilization:

Sterile endoscopy supplies will be stored here, and will be cleaned and hung in a long cabinet with glass doors. Fibre optic scopes will be mechanically cleaned here (suction and blow). Appropriate sized double sinks will be required. Probes and scopes, biopsy channels rinsed with clean water. Some parts need ultrasonic cleaning. Low temperature sterilisation for the scopes will be done here.

viii) Patients' toilets (male & female) including treatment toilets .

ix) Clean utility

x) Dirty utility

xi) Disposal room

xii) Cleaner's room

xiii) Stores:

- Equipment store
- General store
- Linen store
- Sterile store.

xiv) Staff toilets (male and female).

g) Gastrointestinal Laboratory

(i) Manometry

(ii) PTML

(iii) Biofeedback

(iv) EUS

(v) Urea breath test

(vi) pH study

h) Urology Laboratory

(i) Urodynamics

(ii) Ultrasound

(iii) Uro flow rates

(iv) Bladder scan

i) ESWL Room

(i) Lithotripsy room with control room

j) Staff Facilities

(i) General office

To be located near the reception/registration

(ii) Staff change room (male & female)

To be near entrance area. Lockers, toilets and showers will be provided. For staff in the medical area, observation area and endoscopic area.

(iii) Sister's room

(iv) Doctor's room

(v) Staff rest (to be shared among staff from medical, endoscopy and observation areas).

(vi) Seminar room

(vii) Prayer rooms (male & female)

(viii) Staff toilets (male & female)

5.1.3.7 AMBULATORY MEDICAL

a) Blood Transfusion

b) Cytotoxic Drug

5.1.3.8 AMBULATORY SURGICAL

a) GENERAL SURGERY

Examples of Appropriate Operations:

Minor operations on the skin and subcutaneous tissues

Hernioplasty

Haemorrhoidectomy

Anal fistula surgery

Anal fissure surgery

Polypectomy

Laparoscopy

Bronchosopy

Needle biopsy of liver

Oesophagoscopy and dilatation

Breast biopsy

Stripping of varicose veins

Varicocele

Lymph nodes Biopsy

Excision of thyro-glossal cyst

Excision of branchial sinus

Herniotomy

Circumcision

b) ORTHOPAEDIC AND HAND SURGERY

Examples of Appropriate Operations:

Manipulation of joints

Epidural injections

Removal of pins, plates or screws

Excision of ganglia, synovial cyst and benign synoviomata

Decompression of carpal tunnel

De Quervain's release

Removal of neuroma e.g. on the hand

Amputation of ingrowing toe nails

Tenotomy

Excision of exostoses

Interphalangeal fusion of the toes

Release of trigger finger

Removal of external fixator

Simple excision of palmar fascia in Dupuytren's contracture

Removal of foreign bodies

Scar revision

Small free skin grafts

Arthroscopy procedures

c) UROLOGY

Examples of Aporopriate Operations:

Endoscopic procedure

Diagnostic urethro-cystoscopy

Biopsy of bladder lesion

Urethral dilatation and hydrostatic dilation of the bladder

Extracorporeal shock with lithotripsy

Excision of scrotal lesions e.g. sebaceous cysts

Testicular puncture biopsy for fertility

Percutaneous nephrostomy

A-V Fistula

d) ENT SURGERY

Examples of Appropriate operations:

Removal of foreign body from the nose or ear canal

Removal of impacted wax

Biopsy of the ear

Myringotomy with or without the insertion of tympanostomy tube

Removal of tympanostomy tube

Removal of straightforward nasal polyps

Reduction of nasal bone

Electro-cautery of the nasal septum

Submucosal diathermy of the inferior turbinates

Antral puncture and wash out

Removal of vocal polyp

Biopsy of larynx

Diagnostic laryngoscopy and oesophagoscopy

e) GYNAECOLOGY

Uterine curettage

Diagnostic Hysteroscopy

Endometrial ablation with laser or resectoscope

Hysteroscopic resection of uterine septum

Hysteroscopic laparoscopy

Minor and intermediate laparoscopic surgery, e.g.:

(i) Minor: Tubal sterilisation

Biopsy of ovary / peritoneum

Coagulation of mild endometriosis

Aspiration of small ovarian cyst

ii) Intermediate: Lysis of mild to moderate adhesions

Coagulation of moderate endometriosis

Exploration of small ovarian cyst

Uterine ventrosuspension

Salphingectomy

Minor vulval operations

Laser treatment of cervical and vulval lesions which are not suitable for out-patient treatment

f) OPHTHALMOLOGY

Examples of Appropriate Operations:

Strabismus correction

Lacrimal duct probing

Trabeculectomy

Occuloplastic lid surgery

Examination under anaesthesia

Phacoemulsification with IOL implant

AC wash-out

Readjustment of IOL

Dacrycystorhinostomy

Iridectomy

Injecting Gas/SF6/C3F6 into viruses

Extropion and entropion operation

5.1.3.9.1 AMBULATORY ONCOLOGY

a) FUNCTIONAL DESCRIPTION

(i) Ambulatory Oncology Unit will provide consultation and treatment for patients with cancer and some haematological disorders on an outpatient basis, utilizing a multi-disciplinary approach.

(ii) Patient will receive chemotherapy, blood transfusions, education and counseling within unit.

b) NEEDS OF UNIT POPULATION

(i) The patient population will vary from young adults to the elderly.

(ii) Patient will generally be ambulant. However, some may require use of a wheelchair or arrive via ambulance.

(iii) Patient treatment may range from daily to six-week intervals.

(iv) Individual patients may have repeated visits over months or years.

c) OPERATIONAL POLICIES

(i) Hours of Operation

08.30-17.00 hours, Monday - Friday, except public holidays.

(ii) Referrals to the Unit will be made by the Community and Hospital Medical Officers/Specialist.

(iii) Medical Records will be available for each outpatient attendance.

(iv) Treatment

1. Treatment will be planned and administered on the basis of blood testing carried out at the commencement of the unit visit.
2. Specimens will be collected in the Unit and delivered to the Pathology Department for testing.
3. When results are available, if appropriate medication will be administered to the patient in the Unit

4. Other procedures including blood transfusions and venesection will be performed on a day stay basis.

(v) Interpreter service utilised as required.

(vi) The clinic shall be a multidisciplinary/multi-user clinic. Clinic will be conducted on a sessional basis.

(vii) Fine Needle Aspiration and Cytology (FNAC) clinic will be run on a regular, outpatient basis.

(viii) Counseling service and self-help groups will be available to patients with cancer and related malignancies.

(ix) In-service Education

1. Staff are encouraged and supported to attend post graduate courses.
2. A continuing education program is available to inform staff of current treatment and new practices.
3. Weekly academic meeting will be conducted within the unit.
4. Regular in-services for under-graduate/post-graduate medical staff, nursing staff, and general public will be an integral part of the Unit Education Programme.

(x) Infection Control policies adhered to including appropriate disposal of general, biological and cytotoxic wastes.

d) PLANNING CONCEPT

(i) The facility shall be designed to be patient-focused and disabled-friendly.

(ii) Located in an area away from the main office.

(iii) Preferably adjacent to the clinic.

(iv) Ready access to outpatient pharmacy and pathology is desirable.

(v) Easy road access is required for patient arriving by ambulance, public transport or private vehicle.

(vi) Direct access to garden setting/outside courtyard essential.

e) FUNCTIONS OF SPACE

(i) Waiting Area

1. Direct access reception

2. Natural light and pleasant outlook essential.

3. Seating for 20 people.

(ii) Reception/Clerical Area- Special Joinery Item

1. About Waiting Room.

2. Adjacent Treatment Bays

3. Photocopier

4. Facsimile machine

5. Computer workstations for 4 people

6. Telephone outlets

(iii) Consulting/Examination Room x3

1. Ready access to Waiting Room, treatment areas.
2. Examination bunk, with curtain.
3. Clinical Wash Hand basin.
4. X-Ray Viewer
5. Storage – examination equipment, small disposables

(vi) Treatment bay x 20 (with future expansion to 40)

1. Direct access to Waiting Area, Clean Utility, Dirty Utility and patient toilet.
2. Ready access to beverage facility (patient)
3. Overall observation from Reception/Clerical and Staff Station.
4. Separate ambulance entrance.
5. Patient stations x 12 (for patient trolley or chair)

   Two 4 bedded cubicles or two 6 bedded cubicles
6. 6.Patient stations x 8 (enclose, patient trolley)

   Two 4 bedded rooms

Each station: medical gas system (O2, vacuum); nurse call system.

7. Blanket warmer.
8. MATV outlet, video capacity at each cubicle.
9. Storage for resuscitation trolley, books and magazines.
10. Clinical Wash Hand basin x 8
11. Sound system.
12. Natural light, pleasant outlook essential.
13. Sound attenuation.

(v) Toilet – Patient – Disable - Unisex

1. Direct access treatment area.
2. Standard
3. BCA requirements.

(vi) Staff station – Special Joinery Item

1. Direct access patient treatment/procedure areas.
2. Adjoining Reception/Clerical Area.
3. Medical gas alarm panel and isolation valves adjacent.
4. Telephone outlets/intercom
5. Computer workstation

6. Staff's wash hand basin
7. Printer(s)
8. Facsimile machine
9. X-Ray viewing
10. Staff lockers
11. Emergency call

(vii) Procedure Room / Minor OT

1. Mobile bed access.
2. Direct access Treatment Bays.
3. O_2, air, suction N_2O and scavenging outlets.
4. Storage cupboards (clean supplies).
5. X-ray viewer.

This room shall be design and equipped to perform procedures requiring stringent aseptic technique and fluoroscopy, namely invasive pain management procedures, examples celiac plexus block or intra-thecal catheter insertion. Also to be used for minor surgeries like open biopsy, simple wound care, etc, apart from pain management.

This is mainly done by the visiting pain specialist.

(viii) Pantry

1. Ready access from treatment Bays

2. Bench.
3. Sink.
4. Hydrotherm
5. Microwave oven – secured
6. Refregirator.
7. Storage – crockery, cutlery

(ix) Clean Utility

1. Direct access to Staff Station, treatment area.
2. Storage for sterile stock
3. Medication cupboard alarmed. (DDA Cupboard)
4. Intravenous fluid dispensing cupboard
5. Refrigerator.
6. Clinical Wash hand basin.
7. Trolley access.

(x) Dirty Utility

1. Ready access to treatment, procedures, and consulting /examination areas.
2. Pan flusher/sanitizer
3. Utensil washer
4. Rim flushing sink
5. Hand basin

6. Stainless steel bench tops.
7. Exhaust ventilation

(xi) Waste Disposal Room

1. Direct access from Dirty Utility Room.

2. Ready access to Unit exit.

3. Storage soiled linen and waste bins (including cytotoxic).

4. Exhaust ventilation

(xii) Staff Rest

1. Ready access treatment and office areas.
2. Kitchenette area for preparation, storage of food and drinks.
3. Sink.
4. Refrigerator
5. Microwave oven – secured
6. Shelves/ cupboards, storage of crockery/ cutlery
7. Hydrotherm
8. Dining table/chairs
9. Lounge chairs/ office table

(xiii) Doctor's Office

1. Doctor's in charge office
2. Standard office fit out
3. Computer Workstation

(xiv) Sister's Office

1. Sister's in charge office
2. Standard office fit out
3. Computer workstation

(xv) Office- Multipurpose/Interview

1. Standard office fit out
2. Computer workstation
3. Acoustic/visual privacy essential
4. Natural lighting.

(xvi) Tutorial Room

1. Wall – mounted TV/Video – MATV outlet
2. Service audio visual storage.
3. Computer access
4. Whiteboard, large
5. Pin board, large
5. Acoustic/visual privacy
6. Variable lighting level

(xvii) Toilet – Staff – Unisex

1. Standard.

(xviii) Cleaners Room

1. Low traffic area of Unit
2. Cleaners sink
3. Cleaners trolley, vacuum cleaner
4. Storage for cleaning solution and consumables

(xix) Linen Trolley Bay

1. Ready access all patients' areas.
2. Exchange linen trolley- doors, sliding
3. Overhead cupboard for pillows.

f) SPECIFIC DESIGN REQUIREMENT

(i) The building Code of Malaysia applies

(ii) Free standing building – covered link way to Main Hospital

(iii) The Oncology Unit requires a cheerful, positive and stress countering atmosphere. Comfortable spaces and appropriate colour scheme are required.

(iv) Level access from street

(v) Drop zone for client arriving/ leaving by private

vehicle/ ambulance covered waiting area – abuts front entrance.

(vi) A separate ambulance entrance is required for stretcher access to/ from Patient Treatment Bay.

(vii) Each patient station will be equipped with:

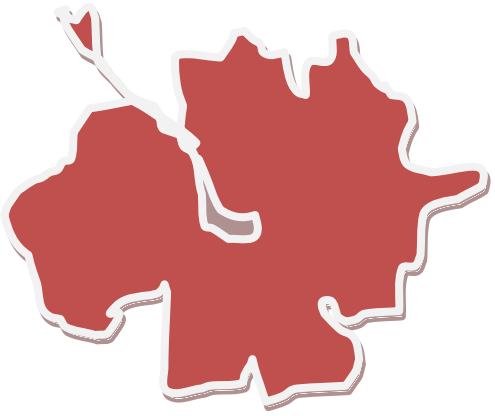
1. Nurse call (patient use)
2. Computer access
3. Telephone outlet
4. O^2 and air suction outlet
5. Double GPOs x 3
6. Ceiling mounted IV track
7. Nurse assist (staff use) between 2 stations

(viii) Telephone and computer cabling to all office, treatment areas.

(ix) Natural light and pleasant outlook are essential in all patient areas and office.

(x) Direct access to screened courtyard with outdoor furniture setting (off treatment area) for patient, separate outdoor screened courtyard for staff. The landscaping should provide a relaxing, interesting external space designed for low ongoing maintenance.

5.2 The Inpatient Services



5.2.1 Inpatient Wards (*VVIP suite*)
5.2.2 Intensive Care Unit (ICU)
5.2.3 Cardiac Care Unit (CCU)
5.2.4 Coronary Intensive Care Unit (CICU)
5.2.5 Neonatal Intensive Care Unit (NICU)

5.2 INPATIENT SERVICES

5.2.1 INPATIENT WARDS

5.2.1.1 FUNCTIONAL DESCRIPTION

a) General

The wards or nursing units/sections provide inpatients with residential environment for which clinical procedures can be carried out which cannot be done on an outpatient basis.

a) TYPES OF WARDS

There will be various types of wards:-

(i) General wards
(ii) Private wards
(iii) High dependency ward (HDW)
(iv) Intensive care wards
    1. Intensive care unit (lCU)
    2. Cardiac Intensive care unit (ClCU)
    3. Coronary care unit (CCU)
    4. Neuro Intensive care unit (Neuro lCU)
    5. Neonatal intensive care unit (NICU)
    6. Burns Unit

All wards will be divided by discipline and gender with exception of intensive care inpatient units, paediatric wards and private wards. The detailed requirements of the intensive care inpatient units and High Dependency

Ward (HDW) are specified in the respective departmental brief.

b) WARDS DISCIPLINES

The wards will be used in the following disciplines:-

(i) General medicine
(ii) General surgery
(iii) Oncology
(iv) ENT/Opthalmology/ Maxillofacial
(v) Orthopaedics
(vi) Obstetrics and gynaecology
(vii) Paediatrics
(viii) Psychiatrics
(ix) Chronic Pain and rehabilitation
(x) Palliative
(xi) Private wards

The wards will have essentially similar feature with some differences depending on the requirements of each discipline. The proposed distribution of beds by discipline and by class is shown by the *Appendix 1.*

c) SERVICES PROVIDED

In the wards patients will be provided with the following medical services:

(i) Regular medical consultation and examination
(ii) Diagnostic procedures
(iii) General nursing
(iv) Definitive/symptomatic treatment
(v) Advice reassurance and health education

(vi) Monitoring and evaluation of physical and mental/emotional status

(vii) Medications

(viii) Rehabilitation

(ix) counselling

These procedures include:-

- Specific investigations requiring preparation
- Establishment of diagnosis
- Treatment regimens requiring absolute bed rest for the patient, frequent monitoring of vital sign, surgery, etc.
- Intensive rehabilitation and training of patients towards disability limitation.

5.2.1.2 OPERATIONAL POLICIES (AND PROCEDURES)

a) Admission to wards

(i) Patients will be transported to the wards by porters at admission areas. The discipline to which a patient is to be admitted, will be determined by the doctor at the Emergency Department (ED) or specialist clinics or health centre (whilst taking into account the availability of beds.)

(ii) For elective cases, admission of patients will be scheduled through the hospital information system and specialized clinics, taking into account the availability of beds.

b) Arrangement of patient areas

(i) Using progressive nursing procedures, patients who are acutely ill, require more frequent monitoring and more intensive nursing procedures (high dependency patients) should be located nearest to the nursing station or staff base.

(ii) Less acute cases can be located away from the nurse base.

(iii) Certain cases will need to be isolated from the others. The cases are patients with acute infectious diseases of high morbidity and/or mortality, or patients who cannot run the risk of cross-infection, e.g.

1. typhoid, pneumonia, infectious hepatitis, immune deficiency syndromes (medical wards)
2. gas gangrene, severe wound sepsis (orthopaedic wards)
3. Post-operative wound sepsis, tetanus (surgical wards)
4. Puerperal sepsis (post-natal ward) , etc.

c) Nursing Procedures

Monitoring of vital signs will be done for all patients at varying degrees of frequency.

d) Medical Appraisal

(i) Doctor's rounds will be done at least twice a day, the major one will be in the morning.

(ii) Each patient will be seen by MO/Registrar and Specialist.
House officer will see cases in Internal medicine, Surgery, Orthopaedic Surgery, Paediatrics and O&G and not in sub specialised disciplines.

(iii) Patients will be followed up after discharge, at the specialist clinics, health clinics or private clinics.

(iv) If an inpatient requires a second opinion, the relevant specialist will see the patient in the ward.

e) Surgery

(i) Major surgery will be performed in the Operating Complex. Patients will be prepared in the wards after appraised by the anaesthetist.

(ii) Minor procedure will be done in the procedure rooms in the ward.

f) Investigations

(i) Laboratory tests

- specimens required for the tests prescribed, will be collected by ward staff and sent though the devices such as pneumatic tube system to the Laboratory (except for fresh blood films which will be collected) by laboratory staff.
- Specimens collected after office hours may be refrigerated pending dispatch to the laboratory, unless results are urgently required when the specimens will be sent immediately.
- Laboratory result will be sent back immediately through computerised linkage system to all the wards.

g) General Toilet

(i) Patients are encouraged to managed themselves unless they are unable to do so or Complete Rest In Bed (CRIB) is prescribed, in which case the patient's toilet will be performed on the bed.

(ii) Assisted bath facilities and disable toilets will be provided in all wards.

h) Patients' Diets

(i) Patients will be asked for their meal selection from the fix hospital menu at stipulated time before meals. The dietary requirements will be

communicated to the catering department via computer terminals.

(ii) Food will be delivered by the kitchen staff on tray and plates. Nursing staff will receive the food supplies, match them against diet request and distribute the food trays. Patients will be required to consume hospital food.

(iii) Food trays will be collected back and taken by the catering staff for centralised washing.

(iv) Beverages and snacks will be prepared in pantry

(v) Patients/Caregivers may use the ward pantry to heat food and make beverages in between meals.

i) Patients' Linen

(i) Patients will be provided with hospital linen. In some instances they are allowed to use their own clothes.

(ii) Bed sheets, pillowcases and pyjamas will be changed at least once in 2 days and whenever soiled.

(iii) Clean linen will be delivered by laundry staff as stated in contract schedule. Soiled linen will be placed in special bags and trolley for collection by contractor.

j) Treatment Procedure

(i) Pharmacotherapy prescribed by the doctor is recorded in the patients' notes/terminals and the nurses' treatment chart.

(ii) Medicine will be served by the staff nurse who sees that patient take the medicine. Injections will be given by the staff nurse.

(iii) Change of dressings, wound irrigations, catheterisation, etc. will be done in the treatment room unless otherwise indicated, in which case it will be done on the patients' bed.

k) Radiology Examination

(i) Radiology/diagnostic imaging requests are prescribed, through the computer terminal where schedules are automatically made through the system. Radiology Department will call for the patient for the examination. Patients will be sent by porters or may be accompanied by a nursing personnel.

(ii) Patients are moved by wheelchair, stretchers or by beds. Patients, who cannot be moved, will be X-

rayed in the wards by the radiology staff using mobile X-ray machines.

l) Other Supplies

(i) Sterile Supplies - the ward will hold 2 week's supply of sterile packs, syringes, needles, etc. in the Clean Utility. Stocks will be replenished by the medical stores by indenting system. Soiled instrument packs will be washed by ward staff in the Dirty Utility and kept in specific bins at the Disposal Holding Room for collection by C.S.S.D. staff.

(ii) Pharmaceutical, antiseptics, disinfectants – these will be prescribed and collected from the WARD satellite pharmacy by unit-of-use system by porters. For commonly used items such as antiseptic and disinfectants indents will be kept in a DDA cupboard, in the Clean Utility, under lock and key with alarm system and withdrawals will be done and recorded by the staff nurse in-charge of the shift.

(iii) Other supplies (e.g. instruments, etc) will be indented from the hospital medical store.

(iv) Stationery will be supplied by the main stationary store of the hospital.

m) Disposal

(i) Soiled linen in double plastic bags - will be collected by Private contractor.

(ii) Food trays/plates and trolley - collected by Kitchen Staff.

(iii) Used surgical instruments will be collected by C.S.S.D. staff.

(iv) Soiled dressings, tissues, contaminated disposable - these will be kept in appropriately tagged/labelled bags pending collection by private contractor for incineration.

(v) Disposal Holding room should lead into a service corridor area outside the ward.

n) Visitors' Control in the Wards

(i) For Intensive care inpatient units and Labour & Delivery Unit, electronic system such as CCTV and intercom will be used to control visitors at the entrance door apart from security personnel with a security post.

(ii) Each patient will be allowed 2 visitors who are allowed to come in during visiting hours. Patients

who are on D.I.L. (Dangerously Ill List) are allowed 2 visitors each, at any time.

(iii) Visitors of the intensive care inpatient units or those in isolation are required to change their foot-wear, gown themselves and wash their hands before and after going in to see the patients.

(iv) If the doctor needs to interview or give advice to a patient's relative/s, the latter will be interviewed in the interview or counselling or doctors room.

(v) A visitors' lounge is provided outside the ward, near the entrance to control visitors from entering the wards outside visiting hours.

(vi) A day lounge inside the ward is provided for patients as well as for them to socialise with their visitors during visiting hours.

(vii) Waste collection by contract staff at respective ward should keep them from coming into the ward with Disposal Holding Room to be located into a service out or at the end of the ward.

5.2.1.3 WORKLOAD

The average BOR of IIUM Hospital is expected to be 80% and may differ by discipline.

5.2.1.4 LOCATIONAL FACTORS

a) Priorities

(i) The general wards should be located away from the outpatient areas but with easy access from the Emergency Department (especially for the wards of general surgery and orthopaedics).

(ii) Orthopaedic and Surgical wards should be near to the Operating Complex.

(iii) Rehabilitation and Radiology departments should be easily accessible.

(iv) The kitchen can be located slightly away but with ready access to service lines.

(v) The obstetric/maternity wards needs to be very near the Labour & Delivery Unit and Neo Natal ICU (NICU).

(vi) The ICU, CICU, Neuro ICU and Burns units, should be on the same level and preferably with direct access to the Operating Complex. The Units should be accessible to all wards through discreet hospital street and vice versa the intensive care inpatient units should be easily accessible from all wards.

(vii) The wards should be accessible to visitors during visiting hours through the visitors control desk and

main hospital street without criss-crossing other patient/staff/service areas.

b) Departmental Relationship

(i) Through general patient/staff circulation (not public) from Emergency Department, Labour and Delivery Unit, ACC, Specialist Clinics, referral from outside hospital and directly admitted on an appointment basis through the admission unit.

(ii) Through general patient/staff circulation (not public) to Radiology Department, Heamodialysis Unit, Rehabilitation Unit, Specialist Clinics, Clinical Research Centre (CRC) and Clinical Examination Centre (CEC) and other for diagnostic and treatment when necessary.

(iii) Through pneumatic tube or equivalent in conveying specimens for laboratory investigations, specimens will be collected in the wards and sent to pathology department**.**

(iv) Through general patient/staff/service circulation (not public) Inpatients will be provided with all dietary requirements, supplied from kitchen and linen from the linen services. Wards will draw sterile instruments from CSSD drugs and other pharmaceutical supplies from pharmacy and hospital medical store.

(v) Patient will be discharged and send to Discharged Lounge to await processing of their documentations prior medications and payment as part of formal discharge.

(vi) Maternity wards to be close/adjacent to Labour Delivery Unit and Neonatal Intensive Care Unit (NICU).

(vii) Surgical wards to close to operating complex

(viii) All wards to close by general patient/staff circulation to Clinical Research Centre (CRC) and Clinical Examination Centre (CEC).

5.2.1.5 PLANNING AND DESIGN CONCEPT

a) Entrance door to all wards should have a security system either mechanically control system or electronic system e.g. SMART card and Key Pad.

b) In principle the wards should be planned and designed to accommodate the needs of the general public and private paying patients. While public wards are separated by gender, age group and discipline in their accommodation; private patients are segregated in designated private wards according to the fee scale.

c) Generally all wards, where possible, should be designed for a particular discipline with flexibility for utilisation by others.

Wards are to be design for mix use to ensure flexibility as the need arises

d) The wards will facilitate the constant observation of patients and allow full range of treatments and procedures to be carried out. High dependency ward are to be equipped with central monitors.

e) The circulation aisle of the ward should be able to accommodate 2 beds being towed or minimum 2.4 wide.

f) Patients with certain conditions such as immuno-compromised and rehabilitation cases shall be nursed in a fully air conditioned with appropriate environment and control as regulated. Therefore the haematology, palliative and chronic pain & rehabilitation wards shall need to be fully air conditioned for controlled environment.

g) All patients' toilets and corridors shall be disable and safety friendly with gadgets such as tactile grab rails and hand rails apart from nurse call systems.

h) Training and teaching facilities shall be provided in each ward.

i) Patients should be able to control his/her own comfort environment from his/her bedsides

j) Provision for wardrobe and lockers to store patients' personal items should be design to avoid clutter and easy access by patient/caregiver.

k) Patients' privacy, dignity and access to view and religious/ibadah acts should be considered in the design.

l) Adequate amenities for each patient bed to account for loss time in hospital, such as use of computer notebook, cell phone, where appropriate, should be considered.

5.2.1.6 WORKFLOW AND FUNCTION OF SPACES

a) **WORKFLOW**

(i) Patient Flow

Patients may be admitted from earlier mentioned departments; some cases may be referred from other health facilities.

After administrative admission, inclusive of deposit payment at the Revenue Collection, patients will be taken to the appropriate ward. A bed will be allocated to each patient and they will change from their every day clothes into patient clothes.

During their stay, patients may be transported to and from departments such as Radiology Department, Operating Complex, Specialist Clinics,

ICU, CICU, CCU, HDW, CEC, CRC and Rehabilitation Department.

Upon discharge by the respective specialist, the patients will change into their every day clothes and will leave with their accompanying family member(s). They will settle the final payment at Revenue collection prior to their exit

Late discharge patients will leave through the Discharge Lounge to make way for his/her beds to be taken.

Generally, all patients will be nursed at their beds. Patients, which are well enough, will be encouraged to leave their beds and use the day room.

(ii) Visitor Flow:

All visitors will be directed by the Visitors Control reception at the visitor's lifts/entrance to the appropriate ward. Upon arrival they will attend the staff base from where they will be directed to the respective room/bay or day room to visit the patients.

(iii) Staff Flow:

The ward nursing staff will change from outdoor clothes into their department clothes in the shared staff changing rooms. After this, they will proceed to their place of work. After work, the process will be reversed.

Doctors/Consultants comes into the ward with overalls and check at staff based prior to making rounds (am and pm) with students, instruct tests, examine patients, discharge patients and assigning students their tasks, demonstrate treatment, etc.

Nursing/allied health tutors similar teaching routine appropriate with the training

(iv) **Students' Flow:**

Students (medical/nursing/allied health) will report to person in charge and conduct necessary tasks deemed him/her according to their training and level.

(v) Material Flow:

Sterile items will be drawn from the CSSD and be brought to the clean utility room where it will be received, checked by the ward's staff and stored.

Linen will be delivered to the linen storeroom. Pharmaceuticals will be brought to the staff base / clean utility room, where it will be received, checked by the responsible nurse and stored.

Patient meals will be delivered directly to the ward where they will be distributed on ready-made trays to the patients.

Used recycling CSSD items will be gross-washed in the dirty utility room, collected in the CSSD containers and kept in dirty utility pending collection.

Soiled linen will also be collected in bags in the dirty utility room for collection.

Waste will be segregate in colour coded bags and kept in the disposal room for collection.

c) FUNCTION OF SPACES

(i) Ward Entrance

1. Reception counter

Staff will be assigned as and when to be stationed at the reception to answer queries by relatives, receipt patients and monitor visitors. Security may post here.

2. Day lounge

This is area for the patients who are ambulating and on the wheelchair to move inside the lounge and interact with the other fellow patients or relatives around.

3. **Public toilets** (male & female), disable toilet, nappy change, breastfeeding room) to be shared

(iii) Nursing Area /Ward

1. Nurse station/staff base

The base is used by the nurses for receiving patients, writing reports, communication and control area for the ward. Provision of space should be made for work station counter top and works tops are necessary for observation of patient. Behind the nurses' should be a white board and pin board for message and miscellaneous recordings. An area should be set aside for the emergency trolleys. Control drug cupboard will be located here.

2. Workstation and reporting area

Designated area needed to be provided for computer terminals / workstation where doctors /staff will do data entry and reporting.

3. Patients/Bed area .

The beds in the typical public wards (25 beds) will be distributed as follows:-

4 X 4 Bedded Bay
2 X 2 Bedded Acute Bay
3 X 1 Single bed
2 X Isolation Room

Each cubicle with have its own toilet bank (1 normal, 1 disable, bath and 2 sinks)

4. **The beds in the private wards** (50 beds, 4 VVIP suites and 1 Royal Suite) will be distributed as follows:-

30 X Single rooms
9 X 2-bedded rooms
2 X Isolation rooms
4 X VVIP suites
1 Royal Suite

5. Isolation rooms (air-conditioned)

The room will be provided with bath/toilet, a lounge chair, visitor chair, locker and a ward robe. It should be provided with an air lock, a space for changing foot wear and facilities for gowning, a shoe rack, and a clinical wash-hand basin.

6. 2-bedded private ward room

There will be an attached bath/toilet and 2 lounge chairs, 2 visitors' chairs, and individual built in cupboards/wardrobes with lockers.

7. Single rooms private ward

Each room will have its own en suite, a lounge chair, visitors chair, built-in cupboard/wardrobe and lockers.

8. **Acute nursing bay**, 2-bedded for general ward (with day space), the nurse base should be facing this area. Acute cases will be kept and nursed here. These patients are those requiring close observations. 2 beds will be dedicated for acute nursing. Shelves are needed for keeping IV bottles, resuscitative equipment, etc. Worktops should be provided. Space should be set aside for holding a medicine trolley, drip stands, portable suction machines, etc. The bay will have attached washbasin.

(iv) Support/Storage Area

1. Treatment room

The treatment room will be adjacent to clean and dirty utility. Dressing, wound toilet, etc. will be done here. Lotion and cream for treatment are held here.

2. **Procedures room**.

Minor surgery, lumbar punctures and sternal punctures will be performed here. Worktops are necessary for laying out sterile sets.

3. Disposal Hold room

Disposal Hold room will be sited at the exit of the ward to ensure movement of disposed items through the ward is minimised and intrusion by porters reduced. General and clinical waste will be kept here in separate bags prior to collection.

4. Dirty utility

Bedpans, urinals, sputum cups, etc. will be washed and kept here. Bed pans, and urinals will be disinfected in a bedpan washer disinfector. A washer disinfector should be provided. Some bench space for doing urine tests. Recycled CSSD items will be stored prior to collection to CSSD.

5. Clean utility

This room is the holding and preparation area for all lean and sterile supplies used in the treatment of patients. Medicine and dressing trolleys will be parked here. It is also used for sale keeping of drug, medicines (except of the controlled drugs) and intravenous infusion packs.

6. Pantry

Food pre-plated in the kitchen will be distributed to patients. Shelves are required for keeping small amounts of milk powder, sugar, biscuits, etc. and some crockery. Worktops and sinks are necessary.

Provision of washing up, preparation of snacks and beverages are required. Microwaves oven to heat food and refrigerator for food storage are to be provided.

7. Cleaner's room

Housekeeping equipment will be cleansed here and kept for use. Space will be provided for storage of cleaning equipment. Disposal or dirty water is through cleaners sink. Exhaust ventilation is required.

8. Linen bay

Supply of clean linen will be held on carts in built-in cupboards. Storage for pillows can be on overhead shelves.

9. Trolley/Wheelchair park

Trolleys and wheelchairs will be parked here. Amount stored is for ward use only. Central porters come with own trolleys to collect patients.

10. General store

For keeping consumable, bulk supply and stationery.

11. Equipment Room

For keeping mobile equipment.

12. Assisted bath

Non-ambulant patients will be brought here and personnel hygiene attended to.

13. Washing/Drying room

Area for patients to dry bath towels and for washing and drying of under clothing and etc. Washing machine & dryer (self services)

14. **Patient's Musolla** (disable friendly)

(iv) Staff Areas

1. Staff change room (male/female)

Ward staff will keep their personal belongings in lockers. About 12 rectangle lockers will be provided for each 22 bedded wards. The room will be with change cubicles, shower and toilets.

2. Doctor's room

For the doctor to write reports, rest, interview relatives, hold discussions, teaching sessions, etc.

3. Sister's office

For the day to day management by the sister in- charge.

4. Staff toilet

Two toilets to be provided in each ward (male & female).

5. Staff rest room (with pantry)

For staff to have their rest and meals.

6. **Musolla for staff (male/female**)

Facilities for ablution will be provided. Can be shared with other wards, separate for male and female. For staff and patients use.

7. On-call room

Two single bed rooms with attached bath room/toilet, and equipped wardrobe, dressing table with IT facilities, writing table, TV, telephone and table lamp.

8. Seminar /teaching & learning rooms

Each ward shall have a seminar room to accommodate 25 people and will be equipped with TV & IT, and AV facilities.

d) ADDITIONAL COMPONENTS FOR EACH DISCIPLINE

The above lists represent features common to all disciplines. However additional features will be required for respective discipline as follows:-

(i) GENERAL SURGERY SPECIAL REQUIREMENTS:

Treatment/Procedure rooms for cases requiring dressings, etc. and for procedures on infected cases.

(ii) ORTHOPAEDICS

1. Plaster room with POP store (for inpatient)

   A room for applying/removing POP is required. This should be placed such as to be easily accessible to all orthopaedics wards. A small store for keeping splints, POP and bandages will be attached. An office for the HA in-charge and a change room will also be provided.

2. Treatment room

   As for general surgery, an additional treatment bay is required.

3. Procedure room

   For procedure such as intra-articular injection.

(iii) OBSTETRICS/MATERNITY WARD

1. Eclampsia Room/isolation room - for eclamptic patients. The room should be able to be darkened, sound proofed and air-conditioned.

2. CTG Room

3. Ultrasound Room

4. All beds will have a baby's crib and facilities for baby's bath.

5. Post-natal nursery - temporary for keeping babies and those whose mothers are not in the ward undergoing treatment etc. 5 cribs will be placed here. A space for a phototherapy unit should be provided

.

6. Pantry- additional space needed for a fridge for keeping milk and a bottle warmer.

7. Breast Feeding Room - for mothers who need privacy to breast feed their babies.

8. Baby Bath - for bathing newborns. 4 baby-baths and a worktop for changing nappies should be available.

9. Nappy Laundry - for washing nappies belonging to patients. Sinks, concrete benches for washing, 2 washer extractors (capable of washing up to 97°C) and spin-dryers are necessary.

10. Linen Store - a large linen store is needed.

(iv) GYNAECOLOGY

Ultrasound will be done in the procedure room.

(v) PAEDIATRICS WARD

1. Children up to 12 years of age will be admitted to paediatric wards, managed by the paediatrician.

2. Other specialists will be called in frequently, especially those of the surgical disciplines.

3. Paediatric wards will be mixed-sex although operationally, the older children (10 years and above) would not be kept in the same room.

4. Patient areas:

4.1 The main difference between Paediatric wards and the typical wards are in the arrangement of patient bed areas since mothers are allowed to room in with their children. Each patient will have mother's accompanying bed/sofa.

4.2 Children with infectious diseases must be isolated to prevent spread to other children. Even among the infected cases, they should be isolated among themselves to prevent cross-infection.

4.3 Since outbreaks of communicable diseases e.g. measles, gastro-

enteritis are unpredictable, the patient accommodation facilities must be flexible to allow rooms to be used for isolation or at times for mother and child and at other times to accommodate more than one patient (with the same disease).

4.4 All isolation rooms require baths/toilets and anteroom to facilitate full barrier nursing

5. Mothers' rest room

For mothers to rest and have their meals, a bath/toilet and kitchenette should be attached. Space accommodates 4 beds and wardrobe. This room is especially for mother of critically ill babies.

6. Day area

This should be large to serve as a play area, common dining area, and educational activities.

7. School room and library

Space for educational activities for school going age children. Equipped with education facilities.

8. Pantry

Additional space is needed for a refrigerator to keep milk, a bottle warmer and ad hoc preparation of special feeds (or modification) snacks and beverages.

Provision for washing of same item and storage of day food and limited crockery and cutlery.

9. Bed store

For folding beds store or sofa store.

(vi) ENT/OPHTHALMOLOGY/MAXILLOFACIAL WARD

They will have 25 bedded wards each for male and female patients. This will include the followings:

1) Bed areas
2) procedure rooms, i
3) Treatment room
4) Special examination room.

(vii) PSYCHIATRIC WARD

"Do not give your property which God assigned you to manage to the insane: but feed and cloth the insane with this property and tell splendid words to him." Quran Sura 4: 5

1. The wards will be 30 bedded wards for male and female rooms which is separated, for preservation of patients privacy and dignity.

Common facility can be shared.

2. Acutely ill patients, who require more frequent monitoring and more intensive care are located nearer the nurse station.

3. Additional features for psychiatric ward:

3.1 Entrance and reception

The entrance will be provided with a friendly and caring, yet secured environment. Doors into the department should be able to be locked and unlocked from both sides.

3.2 **Monitoring and observation of patients** in the rooms and patient area are assisted by video cameras located at strategic points and monitoring can be done at the nurse station. Intercommunication to the Reception from the door will be provided.

3.3 Treatment room, utility, stores and staff room, sisters room, doctors room, wash- up/Disposal, Pantry, Cleaner's room staff toilet can be located between the male and female ward area as common facilities.

3.4 **Day area/cum visitors lounge** is required and can be located at the main entrance with attached toilets.

3.5 Electroconvulsion therapy room

Electroconvulsive therapy for psychiatric patient. ECT machine, operation table, general anaesthesia machine and gas panel will be provided. Resuscitation equipment should be made available. An anaesthetic medical officer and 2 auxiliary staff will be working in the room during the therapy session. ECT room needs air-conditioning.

3.6 Sleep laboratory room

For monitoring of sleeping pattern of patients with sleeping disorders, may it be of neurotic or psychotic cause. The room needs to be equipped with sleeping monitoring machine as well as the normal patients bed and bedside facilities. The room needs to be free from disturbances and the wall will be one way mirror so that staff can monitor from outside without disturbing the patient.

3.7 Psychotherapy room

This room is required for psychotherapy treatment for patients and family members. The room can accommodate about 5 - 6 people. Interview and counselling will be done here.

3.8 Nurses station

Bedside the routine function of a nurse station there will be video monitor to assess and monitor the psychiatric patients' activity and behaviour within their respective rooms. The nurse counter would be large enough to cater for report writing, patient records keeping (hand copy and computer) telecommunication with other departments and nurse call base.

3.9 Patient rooms – 4 bedded, 6 bedded and isolation

Each room will have the patient bed, bed side locker/wardrobes, video camera for monitoring activity, bath room with shower and the toilet attached. The toilet would be with safety features such a press button flush and concealed tanks. The door to the room should be able to be locked and unlocked from both sides

for safety reasons.

3.10 Common dining area

Plated meals will be received by staff in the ward and distributed here. Patients will have their meals in this common area. Plates will be collected and transported to the kitchen for washing. Tables, chairs and wash hand facilities will be provided for patients the dining area.

3.11 Psychiatric rehabilitation

Rehabilitation facilities for occupational therapy will be provided within the psychiatric ward such as ADL rooms, functional skill areas, etc.

(viii) CHRONIC PAIN AND REHABILITATION WARD

1. Reception and day room

2. Patient toilets/bath

Chronic pain and rehabilitation ward will be provided with toilets and showers accessible by the handicapped.

3. Procedures room.

Minor surgery, lumbar punctures, ultrasound and sternal punctures will be performed here. Worktops are necessary for laying out sterile sets.

4. Bed bay/room

Chronic pain and rehabilitation ward should have wheelchair accessible facilities including beds.

The size of bed circulation should be bigger than other wards for movement of wheelchair.

5. Physiotherapy Room

Chronic pain and rehabilitation ward will be provided with area for the “Menang program and rehabilitation” and inclusive of specific physiotherapy for the musculoskeletal.

6. Nurse station

Bedside the routine function of a nurse station there will be video monitor to assess and monitor the ill patient’s activity and behaviour within their respective rooms (post pain procedure or others). The nurse counter would be large enough to cater for report writing, patient records keeping (hand copy and computer) telecommunication with other departments and nurse call base.

(ix) PALLIATIVE WARD

1. The size of bed circulation should be bigger than other wards for movement of wheelchair.

2. Palliative ward will be provided with toilets and showers accessible by the handicapped.

3. Palliative ward should have wheelchair accessible facilities including beds.

4. **Procedures room**.
   Minor surgery, lumbar punctures, chest tube, ultrasound and sternal punctures will be performed here. Worktops are necessary for laying out sterile sets.

5. **Nurses station**
   Bedside the routine function of a nurse station there will be video monitor to assess and monitor the ill patient's activity and behaviour within their respective rooms (post procedure/ pain procedure/ chemotherapy). Ill patients are located nearer the nurse station. The nurse counter would be large enough to cater for report writing, patient records keeping (hand copy

and computer) telecommunication with other departments and nurse call base.

(x) Entrance Area

1. **Entrance lobby**

   Entry to the unit is via the entrance lobby. Space for trolley park to be provided.

2. **Visitor's change (Immunocompromise/post chemotherapy and radiotherapy)**

   Visitors will change their footwear and gown before for gown will be available. A linen hamper will also be provided for depositing used gown on leaving the unit.

3. **Distressed relatives room**

   A separate room will be provided for distressed relatives outside the unit.

4. **Relatives wait**

   A waiting area for visitors to be provided outside the unit.

(xi)ENT /DENTAL WARD

1. The wards to be equipped with ENT treatment equipment in the treatment.
2. Dental chair is required in the treatment room.

(xii) NEURO ICU

1. 2 isolation rooms should be allocated.
2. Others set up as in ICU requirement

(xiii) PRIVATE WARD, VVIP AND ROYAL SUITE (AS A SEPARATE UNIT WITH DEDICATED ENTRANCE)

1. The wards will be separate from the general wards, providing accommodation for inpatient of mixed disciplines and sexes. High standard and quality furnishes / materials will be used in these wards.

2. They will provide accommodation facilities to allow nursing medical staff to deliver care of high standard. At least 4 single rooms and 1 Royal suite will be dedicated for VVIP patients with the provision of specially designed rooms and better furnish and non-medical support facilities.

3. The wards will be of 50-bedded, of single and double bedded air-conditioned wards.

4. Principally they will be mixed sexes and multidiscipline wards.

5. Private ward used for obstetrics will be

accessible to the labour delivery and provided with baby bassinets for each beds, baby bath facilities, holding area and other facilities of an obstetrics ward.

6. All day room/lounge at wards will be equipped with TV screens and IT facilities

vii) Children play and reading room should be provided.

7. Royal Suite will be accommodated with the following:

7.1 Dedicated entrance with lobby and security post

7.2 Personal Guard Room

7.3 Pantry

7.4 Staff rest

7.5 Prayer room

7.6 Nurse Base

7.7 Clean utility

7.8 Dirty Utility

7.9 Staff toilets

7.10 Stores

7.11 ADC room

7.12 Personal Assistant Room

Royal suite for Sultan and Sultanah

7.13 Large room for the Sultan

7.14 Sultanah Room

7.15 Other member of Royal Family

7.16 Ensuite toilet with disable facilities to rooms
7.17 Dining Area
7.18 Discussion Area
7.19 Living Room
7.20 Procedure and Treatment Room
7.21 Prayer Room

5.2.1.7 HUMAN RESOURCE / ORGANISATION

a) The wards of each discipline will be under the charge of the specialist concerned. He will be assisted by the registrars, MOs and HOs.

b) Each general ward will be managed by a nursing team headed by a Sister. Staff nurses work in 3 shifts.

c) Each discipline will have a doctor on call for 24 hours a day.

d) The ward staff will be supervised by individual ward sisters and by call duty sisters after office hours.

5.2.1.8 APPLICATION OF WHOLE HOSPITAL POLICIES

a) Patient/Staff/Student/Visitor

(i) Visitor Control:

Visitors will be allowed in during the visiting hours from 1.00 - 2.00 pm and 4.30 - 7.30 pm.

During the public visiting hours all visitors will be allowed to visit without pass/identity control. Visitors, who need to visit beyond the public visiting hours, will have to obtain authorisation from the responsible person on duty in the respective department or from the general information counter at the main entrance lobby. These visitors will obtain visitor passes. Only holders of such passes will be allowed to enter the inpatient departments during non-visiting hours.

Parents of paediatric patients will have 24-hour access to their children. In Paediatric cubicles, mother accompany child (MAC) will be provided with sofa bed.

b) Logistics (Porterage and Transport) Services:

The central portering staff will carry out routine supply and transport services.

e) Food/ Catering:

Meals will be plated in the Kitchen into special meal trays. It will be delivered to the ward pantry in heated containers by the central pottering staff. The ward staff will undertake the distribution of the meals to the patients.

Used trays and cutlery will be returned to the kitchen to be washed and stored while waiting for subsequent use.

Ward pantries will also provide facilities for the preparation of occasional snacks and beverages for patients.

Staff will take beverages in the staff rest rooms during the breaks.

f) Linen

Linen services will be privatised. Linen will be supplied from the Central Linen Store to the ward linen store by the contractor's staff. Supply will be on a top-up basis.

g) Cleaning and Housekeeping Services:

The cleaning and housekeeping activities will be privatised and the scope of services will be as per contract schedule.

h) Medical Supplies:

The daily medical supply will be based on the unit-of-use system. They will be sent from the Inpatient Pharmacy via Ward Satellite Pharmacy Unit. The ward will also have a certain stock of drugs and medicines, e.g. infusion fluids. These indent supplies will be carried out weekly.

Pharmacy portering staff will deliver the ward's pharmacy supplies in containers directly to the ward staff base where they will be checked by the responsible sister / staff nurse on arrival and stored.

g) Other Supplies:

Non-medical supplies and stationery items will be delivered from the hospital stores on a regular basis by central portering staf.

f) Sterile Supplies:

Sterile packs for dressings and ward treatments will be delivered directly from the CSSD by the central portering staff to the ward clean utility room.

All recycling CSSD items will be gross-washed and cleansed in the rooms, prior to the collection by the central portering staff.

i) Disposal and Waste Handling:

Soiled CSSD items will be collected in CSSD containers and picked-up by central portering staff from the dirty utility on a regular basis.

Infected linen will be bagged in the dirty utility room prior collection by the contractor's staff who will transport them to the Central Dirty Linen Collection.

All other items for disposal will be bagged in colour coded bags and brought to the disposal room from where they will be collected by the contractor's staff and transported to the Waste Collection Centre.

5.2.1.9 ENGINEERING & ENVIRONMENTAL REQUIREMENTS

Refer engineering policies for inpatient areas

5.2.1.10 SPACE PROVISIONS

(Refer Schedule of Accommodation in the Appendix)

5.2 INPATIENT SERVICES

5.2.2 INTENSIVE CARE UNIT (ICU)

5.2.2.1 FUNCTIONAL DESCRIPTION

The intensive care unit will provide intensive care for:

a) Severely ill cases with unstable function.

b) Cases for post-operative observation and continuous monitoring.

c) Cases who may require urgent treatment on life support system.

d) Patients may be admitted to the unit directly from emergency department from operating theatre or due to any complication which may have occurred during hospitalisation in other wards.

e) Since all patients will be bedridden and are connected to monitoring or life support system, their condition requires constant observation, supervision and control by skilled nursing team.

f) Criteria for admission will be strictly followed and patients will be discharged to high dependency ward as soon as they no longer follow the admission criteria.

g) Room should have large, transparent, glass window facing the outside for patient to get outside view to help in day/night orientation.

h) The types of cases admitted are:

(i) patient in coma of recent onset (e.g. head injuries, poisoning, etc)
(ii) intractable shock (haemorrhage)
(iii) certain post-operative cases requiring assisted ventilation.

(Refer distribution of beds in para 4.5)

5.2.2.2 OPERATIONAL POLICIES

a) Patient may be admitted to the Unit directly from Emergency Department (ED), from Operating Complex or due to complication, which may occurred during hospitalisation in other wards

b) Since patients will be bedridden and are connected to monitoring or life support system, their condition requires constant observation, supervision and control by skilled nursing team.

c) Criteria for admission will be strictly followed and patients will be discharged to high dependency ward as soon as they no longer follow admission criteria (refer ICU guidelines).

d) The types of cases admitted are as mentioned para 5.2.2.1 (h).

Others include:

(i) paediatric cases (more than 1 month old) with recurrent apnoeic spells;

(ii) Chronic Obstructive Airway Disease, chest injury.

e) The Unit shall provide:

(i) Monitoring of Vital Signs

(ii) Life Support Procedure / Emergency Resuscitation
These include Intermittent Positive Pressure Resuscitation (IPPR), defibrillation, tracheotomies, insertion of central lines, cut downs, etc.

(iii) General Nursing

General toilet, care of the bladder and bowel, postural drainage, passive exercise, input-output control, tube feeding, hyperalimentation, etc

(iv) Definitive Treatment

This involves various regimes of treatment inclusive of minor procedure.

f) All this will be done at the bedside. An alarm and personnel will be elerted when a patient arrests. This shall facilitate summoning of the anaesthetist /Medical officer while the staffs undertake emergency measure while awaiting assistance from doctor in charge.

g) Visitors Control:
Only immediate family/relatives will be allowed to visit the patients 2 person at a time. Visitors has to change footwear, gown and wash their hands before entering the unit

h) Laboratory investigation shall perform test e.g. Blood gases, auto analysers and labstix test.

5.2.2.3 WORKLOAD

At an Average Length of Stay (ALOS) of 4 days and bed occupancy Rate (BOR) 80%, yearly workload is projected to

5.2.2.4 LOCATIONAL FACTORS

a) The ICU should have direct access to the OT complex. It should also have easy access from all the wards. Services lines to the haemodynamic unit should also be easily accessible.

b) The ICU should have direct access to the general wards, OT complex and high dependency ward.

5.2.2.5 PLANNING AND DESIGN CONCEPTS

a) ICU is a multidiscipline and mixed sex ward. Patients who need life support system will be admitted to this unit. Privacy should be administered where possible between patients.
b) Patients bed area should have access to outside view and daylight
c) There should be ample space around the bed to facilitate emergency resuscitation and x ray procedures.
d) Isolation rooms will have facilities for handwashing and gowning.
e) All the vital equipment in the ICU will be linked to the hospital information system where data/information will be automatically captured at intervals by the computer system.

5.2.2.6 WORKFLOW AND FUNCTION OF SPACES

a) WORKFLOW

(i) Patient Flow

1. Patients may be admitted to the unit from the emergency department, OT, delivery suite, wards within the hospital or other hospitals. Patients will be wheeled to the unit on trolleys.

2. They will enter the unit via an entrance lobby which will be strictly controlled through CCTV and intercom by the nursing staff. Following this, the patients will be transferred through the central corridor to the patient's area.

3. All patients will be nursed in their beds. Medication and resuscitation procedures will be carried out there.

4. Patients will be discharged when their vital signs are stable and spontaneous respiration is satisfactory. Further nursing will be carried out in the high dependency wards from which they will be subsequently transferred to the appropriate ward.

(ii) Staff flow

1. ICU staff will enter the unit through the entrance lobby. They will proceed to the changing room where they will change from outdoor clothes into department's gown and footwear. Following this, they will move to their place of work.

2. On returning to the changing rooms, the process

will be reversed.

(iii) Visitor Flow

Visitors and personnel from other departments of the hospital will enter the unit through the entrance lobby. They will gown-up and change their footwear in a bay at the entrance lobby. Following this, they will move to the staff base/patient areas or other areas.

(iv) Material Flow

1. All sterile supplies will be drawn from CSSD and kept in the sterile store. Linen will be brought to the linen store. Syringes and infusion sets will be kept in the clean utility.
2. Used recycled CSSD items will be gross washed, counted and packed in the dirty utility room. Soiled linen and waste go to the disposal room await collection. These will also be accessible directly from outside. Waste will be kept in separate colour-coded bags or containers (sharps items).

b) FUNCTION OF SPACES

(i) Entrance Area

1. **Entrance lobby**

   Entry to the unit via the entrance lobby. Space for trolley park to be provided.

2. **Visitor's change**

   Visitors will change their footwear and gown before for gown will be available. A linen

hamper will also be provided for depositing used gown on leaving the unit.

3. Distressed relatives room

A separate room will be provided for distressed relatives outside the unit.

4. Relatives wait

A waiting area for visitors to be provided outside the unit.

5. Public Amenities

Toilets, phones, vending machine outside the unit

(ii) Nursing Area

1. Nurse base

The nurse should be able monitor and control the ICU entrance through CCTV and intercom.

2. Multi-bed Area

The multi-bed area will be located for good observation from the staff base. There will be a sufficient space provision around each bed for all vital equipment, computer terminal, treatment trolleys, and a high level of medical gas and electrical outlets. The multi-bed area will accommodate 24 beds in self-contained cubicles. The bed should orientate to view outside. Windows to be

design with wall lowered to allow viewing from the beds.

3. Isolation intensive rooms

4 isolation single-bedded rooms will be provided for infectious patients. They must be large enough to accommodate all the vital equipment. The entrance bay to the room will contain facilities for scrubbing and gowning-up and disposing of gowns. Infection control guidelines to be followed.

(iii) Support/Storage Areas

1 Clean utility

Drugs, treatment trolley and intravenous infusion packs will be held here.

2. Dirty utility

Urinals and bedpans will be washed, disinfected and held here for later use. A flusher-disinfector will be provided.

3. Mobile X-ray bay

The mobile X-ray will be stored in this bay. Charging facilities to be provided

4 Acute laboratory

This will enable urgent instant estimations to be carried out and blood gas analysis to

be undertaken. A small wash area will be provided.

5 Trolley parking

Space for trolley parking to be provided in this unit somewhere near the entrance lobby.

6. Cleaner's room

For washing and holding housekeeping items, as well as for the disposal of dirty water and used cleaning materials.

7. Disposal room

All waste will be kept in this room to await collection. It is to be accessible from outside.

8 Stores:

- General store
- Equipment store
- Sterile store
- Linen store.

(iv) Staff Area

1 Staff change (male & female)

Staff changing rooms need to be accessible from outside and preferably be near to the entrance. Lockers will be provided to keep personnel effects. Shower/toilets will be provided inside the changing rooms. The accommodation will be provided as 2

separate changing rooms for male and female staff.

2. **Offices**:
   - Department Head's Office
   - Doctor's office (space for 4 doctors)
   - Sister's office (with facilities for private interviews with relatives)

3. **Seminar room**
   There should be a seminar room which is to be accessible from the outside.

4. **On-call rooms**
   Provision for 2 doctors on-call accommodation.

5. **Staff rest room with pantry facilities**
   There will be a comfortable rest room available to all staff working within the unit. Beverage and snacks for the staff will be prepared here.

6. **Musolla (male & female)**
   A prayer room will be provided for the staff of the unit, male and female staff separately.

7. **Staff toilet** (male & female).

5.2.2.7 MANAGEMENT AND HUMAN RESOURCE (STAFFING)

a) The unit will operate 24 hours a day, 365 days a year. The staff will work in three shifts.

b) The general ICU will be under the overall direction of the anaesthetist. The ICU patient will be looked after by doctors of the surgical and anaesthesiology departments on a 24-hours basis.

c) The day-to-day running of the ICU will be headed by a sister in-charge who will be assisted by staff nurses.

d) Constant monitoring of other staff would be fairly constant in the unit during the day, e.g. the anaesthetist in-charge, medical officers and physiotherapists.

e) Constant monitoring of patients will be provided by qualified nurses. A high staff to patient ratio will be practised (1:1).

5.2.2.8 APPLICATION OF THE WHOLE HOSPITAL POLICIES

a) Patient/Staff/Student/Visitors

b) Logistic (Porterage and Transport)

c) Food/Catering

d) Linen

e) Security Services

f) Cleaning and Housekeeping Services

g) Sterile Supplies

h) Pharmaceutical

i) Medical and Non Medical Supplies and Storage

j) Disposal and Waste Handling

Applies

5.2.2.9 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

a) Air-Conditioning and Ventilation Requirements

(i) General Areas

(ii) Procedure Areas

(iii) Isolation Rooms

b) Medical Gases

c) Electrical Supply

d) Lighting

e) Communications

f) Water Supply system

g) Drainage System

h) Fire Fighting and Protection/Prevention

i) Other Miscellaneous

Refer Engineering Policies

5.2.2.10 SPACE PROVISION

Refer suggested schedule of accommodation in the appendix.

5.2 INPATIENT SERVICES

5.2.3 CARDIAC CARE UNIT (CCU)

5.2.3.1 FUNCTIONAL DESCRIPTION

The cardiac care unit will provide intensive care for:

a) Severely ill cardiac cases with unstable vital functions.

b) Cases of acute angina and myocardial infarction.

c) It will provide services such as monitoring vital signs through central monitoring system.

d) Life support procedures.

e) Assessment, treatment and resuscitation of acute medical cases such as myocardial infarction, heart block, heart failure and congenital heart disease.

f) General nursing.

5.2.3.2 OPERATIONAL POLICIES

a) All acutely ill cardiac and chest conditions will be admitted this unit.

b) All patients will be nursed in their beds. There should be central console at the nurses' station.

c) All medication/resuscitation/minor procedures will be done at bed side. Medications, minor procedures, infusion drips and trolleys will be prepared in the treatment room.

d) The nursing staff and doctors will perform laboratory investigation using labstix and autoanalysers for blood gases and serum electrolytes.

e) Fluoroscopy machine will be provided to enable pacemakers insertion.

f) CCU will be mixed class and mixed sex ward.

g) Only immediate relatives will be allowed in to see cases. Only one visitor per patient will be allowed at one time.

h) The CCU will draw its sterile supplies from CSSD. Anaesthetic equipment will be sent to respiratory/haemodynamics unit for cleaning and testing. Tubings will be sent to the CSSD for sterilisation.

5.2.3.3 LOCATIONAL FACTORS

a) Priorities

The CCU should have easy access from the emergency department (ED) and wards.

b) Departmental Relationship

(i) Acutely ill cases referred from other hospitals are admitted directly into CCU. Patients may also be admitted through the emergency department.

(ii) The CCU will receive support from the pathology department, emergency department, CSSD, respiratory, and haemodyamic unit, etc.

5.2.3.4 PLANNING AND DESIGN CONCEPT

a) The CCU should have its own entrance/ airlock.

b) The nurse station should face the patient area and preferably located near the entrance so that it can act as reception.

c) Patient area should be designed with ease of staff access and work should there be an emergency

d) Patient and staff areas should be accessible to view and stress free environment

e) Waiting area should be provided for relatives and should be located far from the patients and service areas.

f) The dirty utility should be linked to the external corridor where soiled items can be removed without passing through clean areas.

5.2.3.5 WORKFLOW AND FUNCTION OF SPACES

a) WORKFLOW

(i) Patient Flow

1. Patients may be admitted from emergency department or through specialist clinics or wards within the hospital or other hospitals. CCU staff will be informed of the incoming patient for the necessary preparation.

2. Patients will be transferred to the unit on trolleys.

3. They will enter the unit via an entrance lobby which is controlled by the nursing staff through CCTV and intercom. The patients will be transferred through the central corridor to the patient rooms of CCU.

4. Generally ill patients will be nursed in their beds. However, specialist procedures which cannot be undertaken at the bedside will be carried out in the treatment rooms.
5. Patients will be sent to the cardiac ward once they are stabilised and then subsequently discharged.

(ii) Staff Flow

1. CCU staff will enter the unit through the entrance lobby. They will proceed to the changing rooms where they will change from outdoor cloths into department's gowns and footwear. Following this, they will move to their place of work (staff base

and patient rooms).

2. On returning to the changing room the process will be reversed.

(iii) Visitor Flow

Visitors and personnel from other departments of the hospital will enter the CCU through the entrance lobby. They will move to the staff base/patient rooms.

(iv) Material Flow

1. All sterile supplies will be drawn from CSSD and kept in the sterile store.

2. Linen will be brought to the linen store and packs, syringes and infusion sets will be kept in the clean utility.

3. Used instruments will be gross washed in the dirty utility room and sent to the CSSD. Soiled linen and waste will be sent to the disposal room which will also be accessed directly from outside for collection. Disposal items will be kept in separate colour coded bags or containers (sharp items).

b) FUNCTION OF SPACES

(i) Entrance/Airlock

1. Relative wait

A waiting area for 8 - 10 persons.

(ii) Nursing Area

1. Nurses' station

This will be manned by the nursing staff nurse. They will receive cases, supervise visitors and monitor cases through central console.

2. Patient areas

The patient area will be single cubicles with semi-glazed doors and walls. There will be 12 such cubicles.

(iii) Support / Storage Areas

1. **Treatment room**

Injection and sets for procedures will be prepared and laid out here.

2. Fluoroscopy/Pacemaker room

A fluoroscopy used for pacemaker insertion. Space should be provided for a monitor fluoroscopy table and machine.

3. Clean utility

Drugs, medicine and infusion sets will be kept here.

4. Dirty utility

Used instruments will be washed and held pending collection together with soiled linen.

A door leading out into the disposal/dirty corridor is required. A flusher disinfector will be required.

5. Stores

- General store
- Sterile store
- Equipment store
- Linen store

6. Patient toilet

Assisted toilet and shower will be provided for patients.

7. Pantry

For the preparation of beverage for patients.

8. Trolley Park

Space to be provided for the trolley, stretcher and wheelchair parking.

9. Disposal Hold room

(iv) Staff Area

1. Offices:

- Doctor's office
- Sister's office

2. **Seminar room for 20 - 25 persons**.

3. Staff rest

With pantry facilities for staff to have their coffee/lunch break.

4. **On-call room**
   For doctor on-call who will be required to stay in. An attached bath and toilet is required.

5. **Staff change**
   Staff changes for male and female. Shower, toilet and changing cubicles and lockers are to be provided.

6. **Staff toilet** (male & female)

7. **Musolla** (male & female).

5.2.3.6 MANAGEMENT AND STAFFING

a) The unit will operate 24 hours a day, 365 days a year. The staff will work in three shifts. The unit is managed by a cardiologist.

c) Day-to-day running of CCU will be under the sister in-charge assisted by staff nurses trained in coronary care nursing.

5.2.3.7 APPLICATION OF WHOLE HOSPITAL POLICIES

a) Patient/Staff/Student/Visitors

b) Logistic (Porterage and Transport)

c) Food/Catering

d) Linen

e) Security Services

f) Cleaning and Housekeeping Services

g) Sterile Supplies

h) Pharmaceutical

i) Medical and Non Medical Supplies and Storage

j) Disposal and Waste Handling

5.2.3.8 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

a) Air-Conditioning and Ventilation Requirements

(i) General Areas

(ii) Procedure Areas

(iii) XXXXX

b) Medical Gases

c) Electrical Supply

d) Lighting

e) Communications

f) Water Supply system

g) Drainage System

h) Fire Fighting and Protection/Prevention

i) Other Miscellaneous

5.2.3.10 SPACE PROVISION

Refer suggested Schedule of Accommodation in the appendix.

5.2 INPATIENT SERVICES

5.2.4 NEONATAL INTENSIVE CARE UNIT (NICU)

5.2.4.1 FUNCTIONAL DESCRIPTION

a) The neonatal intensive care unit will provide facilities for newborn babies under one month old, whether born in the hospital, health facilities or at home, who, because of its prematurity, low birth weight, respiratory distress syndrome or other medical condition requires skilled observation or intensive care which cannot be given at the mother's bedside.

b) Intensive care for babies above 1 month old will be provided in ICU or high dependency ward depending on the type of care needed. Babies requiring cardiac or post operative intensive care will be nursed in the CCU or ICU.

c) The NICU will provide the following care for newborns and neonates:

(i) Intensive care for those babies requiring constant care, observation and monitoring.

(ii) Intermediate care for infants who do not require intensive care but still require frequent and a special degree of observation.

(iii) Admission and observation of babies until a decision is made either to return them to the mother or to admit them to NICU for detailed investigation and/or active treatment.

d) Medication/definitive treatment

(i) Bedsides pharmacotherapy, phototherapy and exchange transfusions will be performed in the NICU.

(ii) For babies with infections, isolation rooms with appropriate ventilation and barrier nursing will be provided to prevent spread of infection and cross-infection.

(iii) Retinopathy or prematurity screening will be done here without bringing the neonates into the OT. Facilities required are intubation and oxygen with dark room facilities.

e) Mothers will be taught baby care, applied nutrition, family planning, etc. if indicated.

5.2.4.2 OPERATIONAL POLICIES

a) The hospital will be provided with 28-bedded neonatal intensive care unit (NICU). The division will be as follows:
   (i) Intensive care areas - 10 incubators (intensive type)
   (ii) Intermediate care areas - 6 incubators (nursing type)
   (iii) Isolation rooms - 4 incubators (intensive type)
   (iv) Convalescents bays - 8 bassinets

b) Convalescents care for babies born prematurely, of low birth weight and babies who have recovered from several illnesses who do not require intensive care but requiring other/more feeding and nursing care will be placed in the convalescent bay. There will be facilities for rooming-in of mothers in this bay.

c) 10 bassinets (collapsible type) should be provided in the NICU store for use when required.

d) Newly arrived neonates will be assessed and observed in the assessment area. This area will be equipped with 2 incubators and ventilators.

e) Facilities for washing and drying of nappies will be provided (appropriate capacity of coin-operated washing

machine and drier will be provided). Some clothes lines to be provided.

f) Breast feeding is strongly encouraged. However milk formula is available on request from milk kitchen. Preferably the milk kitchen should be located near to NICU.

g) Imaging examinations will be done in the imaging department to which patients will be transported in incubator. Patients whose conditions preclude them from being brought to the imaging department will be using the mobile x-ray facility located in the NICU. Only blood gases testing will be done in the NICU. Other blood investigation will be done in the pathology department.

5.2.4.3 LOCATIONAL FACTORS

a) As majority of the babies will be received from labour and delivery suite, the NICU must be located adjacent to this unit.

b) Some babies delivered outside will be received via the emergency department. Therefore, there should be direct access to this department. Furthermore, these should be direct access from a designated ambulance entrance by-passing the emergency department.

c) Easy access to OT should be provided for carrying out surgical procedures.

d) For the cleaning and maintenance of the respiratory equipment, direct access to the respiratory and heamodynamic unit (RHU) is to be provided. Otherwise, the NICU will have its own RHU.

5.2.4.4 PLANNING AND DESIGN CONCEPTS

a) The nurse station must be located in an area where adequate observation of all cot areas can be done. This will be achieved by the provision of glass panels between the bays/rooms.

b) The entrance to the unit should be through an airlock. The reception should also overlook the entrance lobby. There will be a central clean corridor as the main thoroughfare of NICU.

c) The areas needing the clearest view for observation are the assessment/observation and intensive care areas. They should be located closest to the nurse station.

d) For efficient nursing care, incubators in intensive area will be arranged on the circular concept.

e) As spread of infection represents a major hazard in NICU，the isolation section must be completely segregated and have a separate circulation. Single room with airlock will be provided in order to prevent spread of infection and cross-infection. This section must also be

designed to house full intensive care and monitoring equipment.

f) The treatment/procedure room should be located between the clean utility and dirty utility. This will allow for the flow of clean items directly from the clean utility room to the treatment/procedure room and not criss-cross with the disposal of soiled items to the dirty utility.

g) The disposal room and the dirty utility should be directly accessible from the external circulation.

h) The cleaner's room and the nappy washing room should be located away from the prime areas.

i) The staff changing room must have access from the external corridor.

j) The mother's facilities should be accessible from the external circulation through the entrance lobby. The mother's sitting room should be adjacent to the patient area and the dividing wall should be glassed-in so that the mothers can see their babies.

k) The milk kitchen should preferably be located adjacent to the NICU.

5.2.4.5 WORKFLOW AND FUNCTION OF SPACES

a) WORKFLOW

b) FUNCTION OF SPACES

(i) Entrance

1 Entrance/lock

Gowning-up and changing of footwear facilities for parents and relatives or visitors and staff from other departments will be provided at the entrance lobby to the unit.

2. Assessment/observation area

2 incubators will be placed in an open bay. Examination trolley and baby bath with radiant heater to be provided.

3. Viewing gallery

The babies may be shown to the parents and relatives through this viewing gallery in circumstances which do not allow them to enter the NICU.

(ii) Nursing Area

1. Staff base/nurses' station

The nurse's station will provide the facilities for administrative work and the focal point for communication (telephones and alarms). It will provide observation for intensive care and observation areas. The scope for central monitoring and clinical information system will be provided in accordance with the hospital IT. The staff should be able

to control the NICU entrance door through CCTV and intercom.

2. Isolation rooms

4 rooms will be provided for the babies with infectious disease.

3. Intensive care area

10 incubators will be available with resuscitation the equipment. These incubators will be arranged as per the circular concept for efficient nursing care. A nurse substation with worktop should be provided. Barrier nursing will be practised here. Baby resuscitation equipment with defibrillator should be placed near the intensive care area and be accessible to other patient area.

4. Intermediate care area

6 incubators will be placed in a open bay and facilities for barrier nursing will be provided. Baby's bath incorporated with radiant heater will be provided.

5. Convalescent bay

This bay will be provided with 8 bassinets and 8 beds for mothers with attached toilets and showers.

Baby's bath with radiant heater will be provided.

6. **Exchange transfusion room**

Exchange transfusion using aseptic technique will be carried out in this room.

7. **Treatment/procedure room**

Minor surgery, lumbar puncture and drawing of blood will be done here. Eye examinations will be done here; it requires a dark room. Ultrasound examination will also be done here.

8. **Phototherapy area**

Space for phototherapy will be provided.

9. **Interview/counselling room**

In this room, confidential advice and counselling to parents will be carried out. It can also be used for internal discussions, report writing and clerical work.

10. **Health education room**

Health education activities and breastfeeding programme will be done here.

d) Support/Storage Areas

i) Acute laboratory

Blood gas analysis will be performed in this room. A table top facility and laboratory sinks for the tests will be provided here.

ii) Incubator cleaning/drying

This room will be used for cleaning, decontamination, drying, minor maintenance and testing of the incubators.

iii) Disposal Hold room

A separate disposal room will be located at the NICU to ensure that movement of disposed items through the unit is minimised and intrusion by porters avoided.

iv) Cleaners room

This room is to be provided with sufficient space for parking and manoeuvring cleaning machine, for the storage of cleaning items and for cleaning of the equipment, disposal of dirty water and used cleaning materials. The room should be exhaust ventilated.

v) Mobile X-ray bay

Mobile X-ray equipment will be kept here.

vi) Pantry

A pantry is required for storage of milk supplies and warming facilities.

vii) Clean utility

Sterile sets for procedures and exchange transfusion will be prepared and laid out on trolleys here before they are wheeled into the respective rooms. Drips and injections will be prepared here. Refrigerator with freezer compartment will be provided for storage of vaccines and drugs.

viii) Dirty utility

This room will be provided with flusher disinfector facilities, storage for recycled CSSD items for collection.

ix) Stores:-

- General store
- Linen store
- Equipment store
- Sterile store.

x) Trolley park

e) Staff Facilities

i) Offices:

- Doctor's office
- Sister's office

ii) On-call room

2 rooms for the doctors' on-call will be provided. It will have an attached shower and toilet.

iii) Staff rest with pantry facilities

iv) Staff change

The staff change will have lockers for the staff safe keeping of their personal belongings. Separate male and female staff change need to be provided complete with toilets and showers.

v) Seminar room

A room with AVA equipment for 20 participants at any one time to be provided.

vi) Musolla (male & female)

Prayer room will be provided for staff on duty with ablution facility.

vii) Staff toilets (male & female)

f) Mothers' Facilities

i) Relative wait/lounge

ii) Mothers' dormitory

A room for 10 - 12 mothers will be provided to accommodate mothers who must stay overnight in the unit. The room will have en suite toilet and shower.

iii) Washing and drying room

This room will provide facilities for the mothers who stay in the dormitory to wash and dry their

clothes. Coin-operated washing and drying machine to be provided.

iv) Pantry

This room will provide facilities for the mothers to prepare beverages and snacks for mothers.

5.2.4.6 MANAGEMENT AND HUMAN RESOURCE (STAFFING)

a) The NICU will be headed by the senior paediatrician who will be supported by MOs.

b) The nursing staff of the NICU and the attendants will be under the supervision of the sister in-charge.

5.2.4.7 APPLICATION OF WHOLE HOSPITAL POLICIES

a) Catering

A pantry will be provided where beverages and snacks may be prepared and where mothers can learn about feed preparation. Meals will be served to accompanying mothers.

b) Cleaning and housekeeping services

Daily routine cleaning activities and major cleaning will be carried out by the private contractor.

c) Linen supplies

Clean linen, including nappies will be supplied by the private contractor on a top-up basis.

d) Medical supplies

Pharmaceuticals will be supplied by the pharmacy on a unit-dose system.

e) Sterile supplies

Sterile items will be supplied by the CSSD on a top-up basis.

f) Milk Supply

i) Breastfeeding will be encouraged with mothers being brought in for feeding time. Ill babies not able to breastfeed are encouraged to take breast milk in bottles.

ii) For other babies, where breast milk is not available, milk will be taken from the milk kitchen and warmed-up in the pantry prior to feeding.

5.2.4.8 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

a) Air-Conditioning and Ventilation Requirements

(i) General Areas

(ii) Procedure Areas

(iii) XXXXX

b) Medical Gases

c) Electrical Supply

d) Lighting

e) Communications

f) Water Supply system

g) Drainage System

h) Fire Fighting and Protection/Prevention

i) Other Miscellaneous

5.2.4.9 SPACE PROVISION

(Refer Schedule of Accommodation in the appendix)

5.2 INPATIENT SERVICES

5.2.5 CORONARY INTENSIVE CARE UNIT (CICU)

5.2.5.1 FUNCTIONAL DESCRIPTION

The coronary intensive care unit will provide intensive care for:

a) Severely ill cases with unstable function.

b) Cases for post-operative observation and continuous monitoring.

c) Cases who may require urgent treatment on life support system.

d) Patients may be admitted to the unit directly from emergency department from operating theatre or due to any complication which may have occurred during

hospitalisation in other wards.

e) Since all patients will be bedridden and are connected to monitoring or life support system, their condition requires constant observation, supervision and control by skilled nursing team.

f) Criteria for admission will be strictly followed and patients will be discharged to high dependency ward as soon as they no longer follow the admission criteria.

g) The types of cases admitted are:
   (i) Patient in coma of recent onset (e.g. head injuries, poisoning, etc)
   (ii) Intractable shock (haemorrhage)
   (iii) Certain post-operative cases requiring assisted ventilation.

5.2.5.2 OPERATIONAL POLICIES

5.2.5.3 WORKLOAD

5.2.5.4 LOCATIONAL FACTOR

The CICU should have direct access to the OT complex. It should also have easy access from all the wards. Services lines to the haemodynamic unit should also be easily accessible.

5.2.5.5 PLANNING CONCEPT

a) CICU is a multidiscipline and mixed sex ward. Patients who need life support system will be admitted to this unit.

b) Isolation rooms will have facilities for hand washing and gowning.

c) There will not be a separate neonatal ICU. All children above 1 month old who need intensive care will be admitted to this ward.

d) All the vital equipment in the CICU will be linked to the hospital information system where data/information will be automatically captured at intervals by the computer system.

e) The CICU should have direct access to the general wards, OT complex and high dependency ward.

5.2.5.6 WORKFLOW & FUNCTIONAL SPACES

a) WORKFLOW

(i) Patient Flow

1. Patients may be admitted to the unit from the emergency department, OT, delivery suite, wards within the hospital or other hospitals. Patients will be wheeled to the unit on trolleys.

2. They will enter the unit via an entrance lobby which will be strictly controlled through CCTV and intercom by the nursing staff. Following this, the patients will be

transferred through the central corridor to the patient's area.

3. All patients will be nursed in their beds. Medication and resuscitation procedures will be carried out there.

4. Patients will be discharged when their vital signs are stable and spontaneous respiration is satisfactory. Further nursing will be carried out in the high dependency wards from which they will be subsequently transferred to the appropriate ward.

(ii) Staff flow

1. CICU staff will enter the unit through the entrance lobby. They will proceed to the changing room where they will change from outdoor clothes into department's gown and footwear. Following this, they will move to their place of work.

2. On returning to the changing rooms, the process will be reversed.

(iii) Visitor Flow

1. Visitors and personnel from other departments of the hospital will enter the unit through the entrance lobby. They will gown-up and change their footwear in a bay at the entrance lobby. Following this, they

will move to the staff base/patient areas or other areas.

(iv) Material Flow

1. All sterile supplies will be drawn from CSSD and kept in the sterile store. Linen will be brought to the linen store. Syringes and infusion sets will be kept in the clean utility.

2. Used recycled CSSD items will be gross washed, counted and packed in the dirty utility room. Soiled linen and waste go to the disposal room await collection. These will also be accessible directly from outside. Waste will be kept in separate colour-coded bags or containers (sharps items).

b) FUNCTION OF SPACES

(i) Entrance Area

1. Entrance lobby

Entry to the unit via the entrance lobby. Space for trolley park to be provided.

2. Visitor's change

Visitors will change their footwear and gown before for gown will be available. A linen hamper will also be provided for depositing used gown on leaving the unit.

3. Distressed relatives room

A separate room will be provided for distressed relatives outside the unit.

4. Relatives wait

A waiting area for visitors to be provided outside the unit.

(ii) Nursing Area

1. Nurse base

The nurse should be able monitor and control the CICU entrance through CCTV and intercom.

2. Multi-bed Area

The multi-bed area will be located for good observation from the staff base. There will be a sufficient space provision around each bed for all vital equipment, computer terminal, treatment trolleys and a high level of medical gas and electrical outlets. The multi-bed area will accommodate 10 beds in self-contained cubicles.

3. Isolation intensive rooms

2 isolation single-bedded rooms will be provided for infectious patients. They must be large enough to accommodate all the vital equipment. The entrance bay to the room will contain facilities for scrubbing and gowning-up and disposing of gowns.

c) Support/Storage Areas

(i) Clean utility

Drugs, treatment trolley and intravenous infusion packs will be held here.

(ii) Dirty utility

Urinals and bedpans will be washed, disinfected and held here for later use. A flusher-disinfector will be provided.

(iii) Mobile X-ray bay

The mobile X-ray will be stored in this bay.

(iv) Acute laboratory

This will enable urgent instant estimations to be carried out and blood gas analysis to be undertaken. A small wash area will be provided.

(v) Trolley parking

Space for trolley parking to be provided in this unit somewhere near the entrance lobby.

(vi) Cleaner's room

For washing and holding housekeeping items, as well as for the disposal of dirty water and used cleaning materials.

(vii) Disposal room

All waste will be kept in this room to await collection. It is to be accessible from outside.

(viii) Stores:

- General store
- Equipment store
- Sterile store
- Linen store.

d) Staff Area

(i) Staff change (male & female)

Staff changing rooms need to be accessible from outside and preferably be near to the entrance. Lockers will be provided to keep personnel effects. Shower/toilets will be provided inside the changing rooms. The accommodation will be provided as 2 separate changing rooms for male and female staff.

(ii) Offices:

- Department Head's Office
- Doctor's office (space for 4 doctors)
- Sister's office (with facilities for private interviews with relatives)

(iii) Seminar room

There should be a seminar room which is to be accessible from the outside.

(iv) On-call rooms

Provision for 2 doctors on-call accommodation.

(v) Staff rest room with pantry facilities

There will be a comfortable rest room available to all staff working within the unit. Beverage and snacks for the staff will be prepared here.

(vi) Prayer room (male & female)
A prayer room will be provided for the staff of the unit, male and female staff separately.

(vii) Staff toilet (male & female).

5.2.5.7 MANAGEMENT AND HUMAN RESOURCE (STAFFING)

a) The unit will operate 24 hours a day, 365 days a year. The staff will work in three shifts.
b) The CICU will be under the overall direction of the anaesthetist. The CICU patient will be looked after by doctors of the surgical and anaesthesiology departments on a 24-hours basis.
c) The day-to-day running of the CICU will be headed by a sister in-charge who will be assisted by staff nurses.
d) Constant monitoring of other staff would be fairly constant in the unit during the day e.g. the anaesthetist in-charge, medical officers and physiotherapists.
e) Constant monitoring of patients will be provided by qualified nurses. A high staff to patient ratio will be practised (1:1)

5.2.5.8 APPLICATION OF WHOLE HOSPITAL POLICIES

5.2.5.9 ENGINEERING & ENVIRONMENTAL SERVICE

REQUIREMENTS

a) Air-Conditioning and Ventilation Requirements
- **(i) General Areas**
- **(ii) Procedure Areas**
- **(iii) XXXXX**

b) Medical Gases

c) Electrical Supply

d) Lighting

e) Communications

f) Water Supply system

g) Drainage System

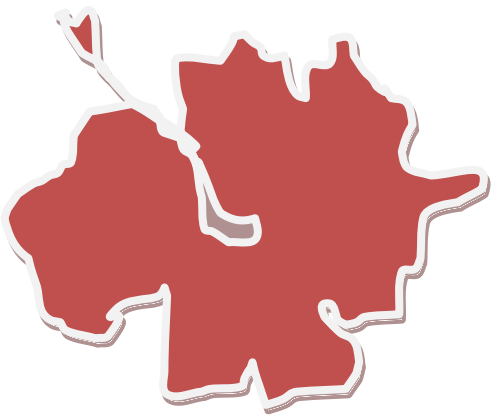
h) Fire Fighting and Protection/Prevention

i) Other Miscellaneous

5.2.4.9 SPACE PROVISION

(Refer Schedule of Accommodation in the appendix)

5.3 Diagnostic and Treatment Services



5.3 DIAGNOSTIC AND TREATMENT SERVICES

5.3.1 OPERATING THEATRES COMPLEX

5.3.1.1 FUNCTIONAL DESCRIPTION

a) The operating theatre (OT) suite provide centralized facilities for inpatients requiring surgical procedures under local or general anaesthesia in sterile and surgically clean conditions. Day care surgery, emergency and trauma department, burns unit and delivery suite will have separate dedicated operation theatres.

b) The function of the department is to receive patients after diagnosis, to provide anaesthesia to patients before operating, to carry out surgical operations and to supervise the post-operative condition of the patients to ensure recovery before returning them to the wards or ICU.

c). The OT suite will be provided within the diagnostic and treatment facility and will consist of 25 OTs in the main theatre complex. In view of its size, the complex will be divided into three zones as in the table on the next page.

d) For the purpose of teleconferencing and teaching, all the OTs will be linked to the auditorium and all seminar rooms in the hospital. The OTs in each zone will share ancillary accommodation such as reception and transfer of patients, clean utilities, as well as facilities for the disposal of soiled material.

e) Post-operative observation will be provided in the recovery room, where the patients will be held until they have recovered from general anaesthesia and until their vital signs are stabilized.

The Distribution of Operation Theatres in The Main Theatre Complex are as follows:

Discipline	No. of OT
Emergency and trauma	2
Day care	10
Obstetric	2
Burns	1
Zone I	
Acute and septic	3
Zone II	
Maxillofacial	1
ENT	1
Ophthalmology	1
Plastic	1
Orthopaedic	3
Zone III	
General/vascular surgery	3

Gynaecology	1
Cardiothoracic	2
Urology	2
Neurosurgery	2
TOTAL	36

5.3.1.2 OPERATIONAL POLICIES

5.3.1.3 WORKLOAD

Workload Summary (table form if applicable)

5.3.1.4 LOCATIONAL FACTORS

a) The OT complex should have direct access to the ICU, CICU and hemodynamic unit.

Priorities

- Provide immediate access from operating department to ICU for the rapid transfer of patients who require intensive support of vital functions.

- The CSSD should be close by, for easy circulation of sterile supplies. A dumb waiter needs to be provided if located on different floors.

- The operating department should be connected via the main hospital circulation to the surgical inpatient wards.

There would be particular advantages in relation to patient movements if the wards accommodating surgical patients and the OTs are near to each other.

- Provide easy access to the respiratory and haemodynamic unit (RHU).

5.3.1.5 PLANNING & DESIGN CONCEPTS

a) The basic planning concept is that of a department with a single controlled entry and two entirely segregated circulation systems for clean and dirty items. Consequently, the department will have a double corridor lay-out, in which the central area consists of the components of the OT suites (operating room, anaesthesia/induction room, scrub-up, sterile/preparation room, exit bay and wash-up/dirty utility room). This central area is flanked on one side by a clean area, to which patients, staff who have changed into OT gown and footwear, and sterile supplies have access, and on the other side by a dirty area through which items for disposal from the OT will be sent out and along which dirty material will be transported to the disposal holding room.

b) The reception and staff control base should oversee the entrance/transfer zone as well as the PAR. Near to it, should be the holding area for patients awaiting surgery. There should be no visual connection between holding and recovery area for patient.

c) With the exception of CSSD items for recycling, all supplies will be routed through the main entrance and through the clean corridor.

d) Staff changing rooms should best be located just away from areas of intensive activity such as OTs and recovery room and should open to the clean corridor of the department. They should be accessible from the outside through controlled airlock entrance. Staff entering the department after having changed should pass through control at the staff control base.

e) The prime importance in the design of the department, is the need to reduce to a minimum the risk of infection in the Operating Room (OR) operating tables. It is most essential to provide highly aseptic conditions for the practice of certain forms of operative surgery. In view of this, selected ORs will be equipped with vertical laminar-flow system.

f) The design of each OR and OTs should follow the same configuration and each OR should be capable of undertaking the full range of surgical procedures. For these reasons, the design approach should anticipate need for flexibility and changing functions in the future, such as for organ transplants.

g) In the developing the design, consideration needs to be given to the sharing of some elements of the OT suite, but this practice must not compromise the integrity of the sterile conditions required in the operating room.

h) Each OTs must be self sufficient and completely separate from another OTs with sterile environment. Selected OR will adjoin another OR for transplant procedures.

i) Where possible, sterile store should have direct access to the sterile preparation room of the OTs for sterility of the material.

j) The plaster room should be located adjacent to the orthopaedic OTs. However, it should be directly accessible the clean corridor for supplies without trespassing the OR.

k) Other components of OT suites (OTs) that could be shared includes the following :

(i) scrub-up facilities between adjacent OTs as long as this does not directly link the ORs. In sharing scrub-up facilities adequate space provision must be made for two teams (one from each OT) to scrub-up simultaneously without contact with each other.
(ii) Anaesthetic/Induction Room
(iii) Washup disposal/dirty utility
(iv) Exit bay

l) Sterile Prep lay up / Prep Room where preparation of instrument trolleys and their pre-operative storage for the cases of each OTs, is least to share. This is to ensure complete sterility of preparation materials.

m) Wash up area/ Dirty utility rooms will be located at the dirty zone (corridor) and will have hatch/controlled door connections to the OTs.

n) The recovery area will serve all the OTs in the department. Because post-operative conditions may demand constant attention by nurse or anaesthetist, and sometimes visits by the surgeon, the recovery area needs to be easily supervised and readily accessible from the OTs. It should have natural daylight to assist with monitoring and patients orientation upon awakening.

o) The anaesthetic workshop should be located immediately adjacent to the OTs and the office of the technician/MA in charge should be part of it.

p) The ICU should be located directly adjacent to the OT Complex to allow for a short emergency route between the two departments.

q) The OT complex should have a lay-out which allows a gradual transition from the most surgically clean zone to the least clean zone. The following grouping of rooms would meet this requirement:

(I) Most clean zone: sterile store, sterile lay-up/preparation room, operating room (theatre), anaesthesia room and scrub-up;
(II) Clean zone: Linen store and staff offices;
(III) Least clean zone: entrance/exit, patient transfer,

staff change and staff rest.

5.3.1.6 WORK FLOW AND FUNCTION OF SPACES

a) WORKFLOW

(i) Patient Flow

1. Preparation of inpatients for surgery will be undertaken in the wards. The patient will have the required diagnostic investigations done, be examined by the anaesthetist if general anaesthesia is envisaged and pre-operative procedures carried out in the wards. Premedication will be given about 1-2 hours before the operation. The patient will be given a fresh change of clothes, covered with a clean sheet and sent to the OT suite.

2. Inpatients will be transported to the OT on beds/trolleys. On arrival at the OT suite at the entrance of the department, they will be wheeled from the transfer zone to the holding area or induction room where lines and drugs will be administered. Following this, they will be wheeled into the OT through the entry bay and transferred on to the operating table.

3. After the operation, the patients will be transferred from the table to a trolley and will be wheeled through an exit bay to the clean

corridor and then to the recovery area. The recovery area will provide constant skilled nursing supervision of the post-operative patients who are recovering from general anaesthesia. Following the recovery, the patients will be returned to the wards or high dependency ward. Cases requiring intensive support of vital functions will be moved to the adjacent ICU.

(ii) Relatives Flow

1. Relatives of disable patient, paediatric and other may accompany patient into the OR through relative changing room and exit as soon as the patient has been anaesthetised though the same way.

2. Relative will wait at the relative wait where staff, if required, will call for interview or inform of the patients status.

(iii) Staff Flow/Students

1 OT staff will enter the clean area through changing rooms. There they will change from their uniform or outdoor clothes into clean theatre clothing, including appropriate mask, footwear and hair cover. Following this, they will move to their place of work. On

returning to the changing room, the process will be reversed.

2 The surgical staff will scrub-up in the scrub-up room, enter the OT and gown-up at its entrance. After completing the operation they will proceed to rest room/pantry and/or changing facilities and then to the exit. Staff leaving the OT suite will have to change into fresh OT clothes when re-entering.

3. The anaesthesia staff will move from the changing rooms to the gowning area (scrub-up room), to the anaesthesia room, and to the operation room. After operation they will return to the anaesthesia room and may visit the post-anaesthetic recovery area. Alternatively they may proceed to the rest rooms/pantry and/or changing area and to the exit.

4 For other members of the staff the route will be from the changing area to the respective working areas and rest rooms/pantry and later via changing areas to the exit.

5. At times, doctors need to inform the relatives regarding the patient's condition and progress during or after the operation.

(iv) Material Flow

1. All sterile supplies such as linen, surgical packs and instrument trays will be drawn from the CSSD. They will be brought to the sterile store within the clean area. Before each operating session, the appropriate instrument trays will be brought to each theatre preparation room, and made ready for the operation. Sterile drapes and gowns will be supplied together with the instrument trays, to the preparation rooms. Sutures will be held in the theatre sterile store with a back up in the preparation room.

2. All CSSD items for recycling will be passed out through a hatch to the dirty utility room. After gross washing and counting, they will be brought to the dirty corridor, from where they will be sent to the CSSD. Here they will be checked, cleaned (disinfected) and sterilized.

3. Items for disposal, infected materials and soiled linen will be removed from the theatre via the dirty corridor and held in the disposal room to await collection. These items will be kept in separate colour-coded bags in disposal room.

4. Pharmacy supplies will be delivered from the pharmacy to the staff control base. From there, they will be distributed to anaesthesia, preparation and recovery rooms. Pharmacy

returns will be sent to the disposal room from where they will be collected.

5. Pathology specimens will be sent from the theatres to the pathology department using the pneumatic tube. For urgent blood gas analyses and frozen section examinations, an acute laboratory will be provided in the OT area.

b) FUNCTION OF SPACES

(i) Entrance and Transfer Zone

1. Entrance/exit

The entrance will comprise a transfer area with airlock zone where the patient is transferred across the clean/dirty line onto a clean theatre trolley. Parking space for the beds/trolleys used to transfer patients to and from the department will be provided with facilities for a porters base.

2. Staff/nurse control base

The base will be located at the entrance to the OTC within the clean zone and will be easily accessible from reception. It is the control point for the co-ordination of staff activities, the movement of patients (arrival, transfer, waiting for surgery) as well as for the coordination of patients to the post-anaesthesia recovery room. It will also provide a communications link between the

OTC to the rest of the hospital. A foyer of 30 holding bays will be provided for the OTC.

3. Disposal Hold room

The disposal room will be located near the exit area connecting directly to the 'dirty' corridor. This room will be segregated from the clean area and will be accessible from outside. All items for disposal will be kept here in colour coded containers awaiting collection.

(ii) **Operating Theatre Suites (OTs)**

1. Anaesthesia/Induction room

In these rooms anaesthesia will be induced to patients before surgery. They will have an identical layout, with work top and storage units located on one side of the patient, and piped medical gases, medical vacuum and anaesthetic gas scavenging terminals on the other side.

The anaesthesia rooms will have direct access from the clean corridor and to the Operating Room (OR), as the patients will taken first to the anaesthesia room prior the OR.

2. Scrub-up

This room or area will be accessible from the clean corridor and will lead directly into the

OR. The surgical team members will scrub-up here, enter the OR and put on sterile gown and gloves with the assistance of a circulating nurse.

3. Sterile lay-up/Preparation rooms

In this room sterile packs will be kept on shelves and the linen including blanket and instruments required for an operation will be laid out on trolleys ready for use. This will be done towards the end of preceding operation. Working space for two members of staff and space for the sterile trolleys laid for the next case will be provided. All preparation rooms will have an identical layout.

Flash sterilization, if relevant, will be done where instruments will be washed in the dirty utility, then put into a pass-through sterilizer. The instrument will be retrieved in the preparation room on the other side of the pass-through sterilizer.

4. Operating Room (theatre)

Surgery will be carried out here. All ORs will have a standard layout. Sufficient space will be allowed for the surgical team members, assisting staff and anaesthetist and equipment used in the operative procedure. An OT table, ceiling mounted OT light, ceiling pendants, anaesthetic machine, wall-mounted X-ray illuminators and a clock will be provided. The cardiothoracic OT, orthopaedic OT and urology OT will be larger

due to the nature of the surgical procedures which require special equipment.

Entry will be provided through scrub-up (surgical staff), anaesthesia rooms (patients and anaesthetist) and preparation room. Exit is through exit bay (patients). These functional areas will be situated between clean corridor and OT.

Items for disposal will be removed through the hatch to the dirty utility.

5 Wash up disposal/Dirty utility

This space will be adjacent to the OT, but will be located on the side of the dirty corridor. There will be a hatch between the OT and the dirty utility to pass through the items for disposal and dirty linen.

A dirty utility can be shared between 2 OTs.

Gross washing of soiled instruments as well as bagging of different items for disposal will be carried out here prior to dispatch to the disposal room. All materials for disposal will be removed via the dirty corridor.

6. Plaster room

This room will provide facilities for applying plasters of paris (POP) casts following orthopaedic operations. This avoids entering the OR where orthopaedic operations are carried out. It will be located adjacent to this

OR and will have direct access so that personnel can enter this room without going through the OR. It requires special plaster traps in its drainage system.

7. Exit Bay

8. Doctors write up area

9. Trolley/bed park

Space will be provided for parking trolleys/beds to receive the patient after undergoing surgery.

(iii) **Storage/support areas**

Each type of store is to be provided in several units depending on the layout of the OT suite.

1. Sterile store

The sterile store will be for all the sterile supplies. A separate store is to be provided for gloves and sutures.

2. Anaesthethic store

For storage of drugs of all types and commercial sterile items/ consumable items including IV solutions.

3. General store

The general store will be for the storage of general consumables, disposables and stationeries.

4. Linen store

A separate room will be provided within the clean area for the storage of sterile linen.

5. Equipment store

A separate room will be provided for the storage of bulky items (mostly floor standing items) not in daily use. Allowed space should be sufficient to permit easy retrieval of each item.

6. Endoscopic store

A dedicated space has to be provided for storage of scopes.

7. Anaesthetic equipment store

For storage of anaesthetic equipment, mainly ventilators.

8. Implants store

For storage of implants and accessories; to be adjacent to the orthopaedic OTs.

9. Mobile equipment bays

Equipment storage needs to be provided at designated area.

10. Cleaners' room

There will be several cleaner's rooms, serving the OT proper which need to be separated from those serving the other areas of the OT suite. These rooms will provide sufficient space for parking and manoeuvring of cleaning machines, for the cleaning of equipment, disposal of dirty water and used cleaning materials.

11 Orthopaedic stores

12 Equipment Room

(iv) Medical Support Services

1. Blood freezer

A blood freezer is to be located near the staff base at the entrance.

2. Mobile C-arm parking area

Diagnostic imaging/radiology services will be provided by members of the staff of the Radiology Department using mobile C-arm. Digital imaging PACS bays will be available for the OT and in the post-anaesthetic recovery area.

A parking area for a mobile C-arm machine will be provided in the clean area.

3. Acute laboratory

Certain tests such as blood gas analysis and frozen section examinations, if urgently needed will be carried out in the laboratory which will be located within the OTC.

4. Low temperature sterilisation area

Washing facilities for scopes and facilities for low temperature sterilization will be done here.

5. Dumb waiter (if required)

A separate dumb waiter to and from the CCSD will be provided in clean and dirty areas if located on different levels from CSSD. It should be able to accommodate CSSD trolley and other equipment.

(v) **Post-anaesthetic Recovery Area**

1. Post-anaesthesia recovery room (PAR)

The PAR room will be located within the clean zone, separated from the holding area. This area will accommodate about 33 patients. Observation of patients in the immediate post-operative period will be carried out here, until their vital signs are stable enough to return them to the wards. A nurse base will be located in a strategic position within the area and with direct access to dirty and clean utilities.

2. Clean utility

This room will act as a storage facility for consumables and equipment, including sterile goods, needed in the PAR. It will be closely related to the PAR nurse base.

3. Dirty utility

The dirty utility will provide facilities for the storage, preparation for use and disposal of contents after use, of vomit bowls, bedpans, urine bottles and for urine testing. Other activities includes cleaning suction bottles, examining specimens and holding items for disposal from PAR prior to dispatch via the dirty corridor to the disposal room at the exit of the OT suite.

4. Transfer zone/exit bay

The post-operative patients will be ransported to the wards through to this transfer zone and exit.

(vi) **Staff Facilities/Administration Area**

1. Staff changing facilities (airlock)

The changing facilities for male and female staff will be near to the entrance in the general access zone. Staff will change from street clothes or uniforms into clean OT clothes and appropriate OT footwear. The location should be such that after changing staff can proceed directly to their place of work.

Adequate numbers of lockers will be provided to keep personal effects. Showers, toilets and change cubicles will be in the changing rooms.

The accommodation will be provided as 2 changing rooms, one for male and one for female staff for each zone.

2. Staff rest & pantry

There will be 2 comfortable rest rooms, available to all staff working within the clean zone consisting of a room for medical officers and one for the other staff. The rooms will have hatches to outside so that items for disposal may be passed out through airlock hatch.

A pantry and a dining area will be adjacent to these room. In the pantry, facilities will be provided for the preparation of beverages and snacks, the storage and washing-up of a limited amount of crockery and cutlery, and the storage of dry provisions and beverages.

3. Musolla

Prayer rooms (male and female) will be provided, adjacent to the changing room.

4. On-call rooms

4 on-call rooms, with Ensuite toilets and other facilities need to be provided.

5. Offices

The following offices will be provided within the clean zone:

i) 3 offices for the theatre nursing staff. This office will be used mainly by the OT sister in-charge, to perform her administrative duties.

ii) 3 dictation cubicles for the use of the surgeons and MOs.

iii) 3 anaesthetist's offices for the use of the anaesthetist.

iv) stores

6. Seminar room

2 seminar rooms are to be provided for in-service training of all staff /students working/learning within the OT C.

(viii). Visitors' Area

1. Public wait

A public waiting area is to be provided, to accommodate about 30 persons. Amenities such as public toilet, vending machine and telephone booth provided.

2. Interview rooms

These rooms need to be provided so that staff will be able to communicate and interact without changing out of their OT clothing

3. Relative changing room

Adjoining the relative wait, the room is for relative to change to OT gowning clothes to accompany 'special'/ paediatric patient prior operation.

4. Musolla (male & female)

5.3.1.7 MANAGEMENT & HUMAN RESOURCE (STAFFING)

a) The OT suite or operating department will normally operate from 7.30 am till 4.15 pm. However, three of the OTs will operate on a 24-hour basis for emergency cases.

b) The OT suite will be managed on an overall basis by the anaesthetist supported by the OT sister who will be responsible for its daily administration.

c) The anaesthetist will be in-charge of anaesthetic induction, its supervision during surgery and the observation of patients during the post-anaesthesia recovery period. Staff of other departments such as radiology and pathology will be called in to assist, if and when needed.

5.3.1.8 APPLICATION OF WHOLE HOSPITAL POLICIES

a) Catering

Beverages will be prepared in the pantry located in the staff rest rooms. Microwave and limited storage facilities, including refrigerator, will be provided.

b) Cleaning and housekeeping services

i) Separate storage will be provided for cleaning equipment and materials used exclusively within the clean and dirty zones.

ii) Between operations the operating table and all upward facing surfaces will be cleaned. The OT floor in the vicinity of the operating table will be mopped according to need. OT staff will be responsible for the routine cleaning of equipment.

iii) At the end of the day's operating sessions all OT equipment will be washed. The OT floors will be mechanically scrubbed and wet vacuumed, while other areas e.g. the recovery area, will be scrubbed if necessary.

iv) The cleaning of the OT trolleys will be carried out in the trolley holding area.

c) Sterile supplies

All sterile supplies such as linen, packs and instrument trays will be drawn from the CSSD. They will be stored in the sterile store of the department within the clean area and distributed to the preparation rooms of the OTs where they will be laid out for use in OT. Gowns will be supplied to the OTs.

d) Medical and non-medical supplies and storage

i) The various items supplied to the operating department will be stored in the various stores, as follows:

1. catering supplies in the pantry
2. stationery and non-medical items in the general store
3. sterile items in the sterile store and preparation area
4. clean linen in the linen store
5. cleaning items and equipment in the cleaners' room
6. theatre clothing, in the staff changing areas
7. blood, temporary storage in a refrigerator near the staff base
8. plaster supplies for immediate use, on a plaster trolley in the plaster room
9. operating table accessories, in a cupboard in the equipment store
10. warm blanket in preparation area
11. bed/trolley linen supplies, in the post-anaesthetic recovery area and, a small quantity, in each anaesthesia room
12. bulky equipment, which is not used every day, in the equipment store.

ii) In addition, each anaesthesia room, scrub-up, theatre preparation room and the nurse base within the post-anaesthetic recovery area will have storage facilities to meet their immediate needs.

iii) Provision will be made for the storage and security of controlled drugs and drugs liable to misuse. The controlled drugs cupboard and the drugs register will be sited at the staff control base.

iv) Drugs likely to be needed during operations may be issued in predetermined fixed quantities to the manager of the unit. When not required by the anaesthetist these drugs will be locked in the cupboard provided within each anaesthesia room.

v) At the end of each operating session, the quantity of drugs remaining will be checked against those received and then returned to the controlled drugs cupboard.

e) Porterage and transport services

Transport of the patients, routine supply and disposal services will be carried out by the central porterage staff on schedule or request. A seating space will be provided outside, but near the entrance of the department.

f) Disposal and waste handling

i) Soiled linen and waste will be put in separate colour-coded bags and kept in the disposal room before being collected by the private contractor. Used instrument sets will be sent to the CSSD.

ii) Recovery area disposal items will be held temporarily within the dirty utility of the post-anaesthetic recovery areas until they can be taken to the disposal room.

iii) Pathology specimens from the OTs will be sent to the pathology department through the pneumatic tube.

5.3.1.9 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

a) Air-Conditioning and Ventilation Requirements

(i) General Areas

(ii) Procedure Areas

(iii) XXXXX

b) Medical Gases

c) Electrical Supply

d) Lighting

e) Communications

f) Water Supply system

g) Drainage System

h) Fire Fighting and Protection/Prevention

i) Other Miscellaneous

5.3.1.10 SPACE PROVISION

5.3 DIAGNOSTIC AND TREATMENT SERVICES

5.3.2 LABOUR AND DELIVERY UNIT

5.3.2.1 FUNCTIONAL DESCRIPTION

a) This department provides obstetric services and manages all obstetric emergencies.

b) Patients in labour / suspected labour will be assessed here for admission or at Pregnancy Assessment Centre (PAC) at the ED.

c) Obstetric surgery will be conducted in the main OT Suite.

5.3.2.2 OPERATIONAL POLICIES

a) Reception / Admission

(i) All maternity cases presenting for admission will come to reception / admission section. Those not in established labour, have no complications and are not due for delivery, will be sent to the antenatal / female ward for observation.

(ii) Patients in early labour will be given an enema and change of clothing before admission into delivery room.

(iii) Patients will be placed in Delivery Room from stage 1 till delivered.

(iv) Patients in advanced labour and cases of obstetric emergencies will go directly to Delivery Suite or O.T. if needed.

(v) Other cases requiring admission will be admitted and sent to antenatal or postnatal areas (e.g. BBA cases).

(vI) The admission section will operate 24 hours.

b) Management of Delivery

(i) In the Delivery Room maternal vital signs, contractions and foetal heart rate are monitored at regular intervals (every 15 minutes).

(ii) Patients in early labour with intact membranes are encouraged to walk around. They can sit in the lounge provided.

(iii) Regular interval examinations will be done to assess progress.

(iv) Patients in advanced labour are not allowed to move around or use the toilet.

(v) Assisted SVDs, forceps deliveries and vacuum extractions will be performed here.

(vI) Cases of prolonged labour, foetal distress, obstructed labour, etc., will be transferred to O.T.

(vII) After delivery the patient is kept for 1 hour to observe for haemorrhage.

(viii) Patients with uterine inertia requiring Pitocin drips, will be infused in the delivery room.

(ix) Patients' spouses or immediate relative are encourage to accompany the patients in labour rooms for moral support to patients (husband friendly). They are strictly

prohibited from entering other patients' room or to linger around the internal corridor.

c) Care of Newborns

(i) Directly after birth the baby is shown to the mother who will confirm the sex. Mother and newborn are then tagged with matching bracelets.

(ii) Newborns are returned immediately to their mothers after they are cleaned at the baby cleaning area; to commence breastfeeding if the mothers' condition is permissible.

(iii) Babies with asphyxia and respiratory problems are resuscitated immediately after delivery using a mobile resuscitation unit and then transferred to ~~the nearest hospital available with SCN~~/NICU.

d) Obstetric Surgery

(i) Operations which will be undertaken in the main O.T. include:

1. Caesarean sections
2. Emergency hysterectomies
3. Manual removals of placenta
4. Uterine Inversions
5. Certain examinations under G.A.
6. Tubal ligations.
7. other

(ii) Cases will come from wards, delivery room or directly transferred to OT on admission.

(iii) The medical officer and anaesthetic m.o. on duty will assess the patients prior to surgery.

(iv) Preparation of patients for surgery will be done in the preparation room of admission area (for emergency admissions), in delivery area or in the female / obstetric ward (elective cases).

(v) After surgery patient is kept in a recovery area before transfer to the ward.

e) Care of Eclampsia Patient

Cases of eclampsia will be managed in a delivery room. Patient will be induced and delivered in the delivery room itself without moving. Controlled lighting system such as black out curtains and dimmers should be provided.

5.3.3.3 WORKLOAD

With delivery rate between 9 to 10 deliveries a day, expected annual workload is 3600 deliveries.

5.3.3.4 LOCATIONAL FACTORS

5.3.3.5 PLANNING AND DESIGN CONCEPTS

a) The delivery suite complex must have its own access road and should be separated from the main hospital entrance.

b) The O&G ward should be located on the same floor as the delivery suites with direct access.

c) NICU to have direct access from the delivery suite.

d) The delivery suite shall have easy access to blood bank, Imaging Department, Pathology Department, C.S.S.D through general circulation.

e) The Reception / Admission/PAC area should be at the front portion of the Delivery Suite with direct access by road.

f) The reception area requires an adjoining records room for keeping records.

g) A waiting area for relatives should adjoin the reception counter.

h) An examination room with a sub-wait for patients is required. The preparation and enema room should be situated adjacent to the examination room.

i) The delivery suite should be compartmentalised with its own airlock.

j) Staff change for 20 people with showers, toilets, lockers, crossover bench with shoe rack and changing cubicles to be provided.

k) The Delivery Suite will consist of 20 delivery suites/ Labour Delivery Room (LDR). Two LDRs will share one en-suite toilet and shower, with a vanity outside the cubicles.

l) Nurses' station is to be located close to the LDRs with satellite station if it is remote.

m) The doctor's on-call room with sleeping facilities, bath and toilet will be located between delivery suite and Gynaecology & Obstetric Ward (if applicable)

n) After delivery, patients should be transferred to the bed where she was posted before in the assigned ward.

o) The layout of the Delivery Suite should permit only one-way flow of clean and dirty materials.

5.3.3.6 WORKFLOW & FUNCTION OF SPACES

a) Workflow

(i) Patient Flow

1. The antenatal patients in Obstetric Ward will be deliver in the Delivery Suite.
2. After delivery, mothers and healthy neonates will be transferred to postnatal area of the O & G ward.

(ii) Babies

1. Premature babies or those with poor APGAR scores will be sent to other hospital with specialised facilities.

(iii) Material Flow

Sterile linen for the delivery suite and all procedure sets will be drawnfrom C.S.S.D.

Clean linen and food for the patients will come from Linen Holding area and Kitchen respectively.

Blood packs will be obtained from the Blood Bank.

(iv) Radiology Department staff may be required to come to the Delivery Suite for emergency X-ray examination.

(v) Similarly, Pathology Department staff may be called in if necessary. Non-urgent samples will be dispatched to the Laboratory.

(vi) Patients may be brought in through an ambulance-call service.

(vii) Elective maternity cases will be scheduled if necessary.

(viii) Emergency maternity cases will be transferred to other specialised hospitals for further management if required.

b) FUNCTION OF SPACES

(i) Entrance/Reception Area At Ground level

1. Drop-off porch

A well-covered drop-off point is required for dropping off patients from ambulance and private vehicles as well to pick up patients for transfer referral. This area must be well discreet from the public car park or public area near the drop-off area

2. Pregnancy/Pre Assessment Centre (PAC)

(refer ED brief for PAC)

(ii) At Labour Delivery Unit Entrance

1. **Reception Counter**

It shall be easily viewed by patients, visitors who come into the waiting area. For staff, it will be directly connected to internal L&D area. Behind the counter there will a room to put records cabinet and space for the nurses to do clerical work.

2. Records room

3. **Relatives' waiting room**

Relatives accompanying the patients may wait in this waiting room/area. It shall able to accommodate about 12 people a time. A small play area for patients' small children shall be allocated here. There will also be provision for dedicated coin and card operated telephone booth usable by disabled and able people; and drinks and food vending machine for the relatives as well as staff.

4. Play Area/room

.

5. Public toilets /Disabled toilet.

It shall be located near to the relatives waiting area.

6. Trolley/Wheelchair park

Trolleys and wheelchairs will be parked here for patients who needs the assistance/patients coming from the ward.

(iii) Consultation/Examination Area

Subwait/lounge

C/E room

(iv) Assessment Area

1. **Assessment room**

Assessment of the patients will be done here with regard to the status of labour. There will be provision for 1

workstation where nurses will take histories.

2. **Patient change**

On confirmation of the advanced status of labour, the patients will be directed into this room. Lockers will be provided where the personal belongings of the patients may be kept. As enemas will be given here if indicated, a 3-in-1 toilet/shower will be attached.

3. **Enema room**

Enema is given to patient in this room. It is located beside the change room. An attached toilet to be provided. A clinical hand wash basin and dry work bench are required here.

(v) Observation Bay

(vi) Patient Toilet

(vii) Labour/Delivery Area

1. Staff base

The staff base will provide the facilities for administrative work and the focal point for communication (telephones and alarms). The BHT trolley will be held here.

2. Labour/delivery room

20 **delivery rooms** are required. The patient will be admitted into the room

and go through the process of labour and delivery here. As much as possible, the room should have a non-clinical atmosphere and husband friendly so as to encourage the husband or a relative be with the patient during the entire delivery process. The necessary clinical items for delivery should be kept on delivery trolley inside the room (one for each room). Two rooms shall be sharing an ensuite toilet. This toilet shall be used only by the patients. It shall have the vanity at the ante-lock and a 3-in-1 toilet/shower. Nurse call system shall be provided in the anteroom and toilet.

Space should allow for at least 2 staff managing the delivery, a bassinet, a cardiotocograph, a maneuvering trolley and one visitor's chair. As well as resuscitation equipment in case of urgent resuscitation is required. Or else resuscitation is done at the resuscitation bay.

3. Patient lounge

This lounge is for mothers who have undergone assessment and due delivery in early stage yet but have to wait for a vacant delivery room. Therefore it shall be near the delivery area as well as the staff base, to

assist mothers as they go into labour at unexpected time.

4. Clean utility

It will hold high cupboard, under-bench cabinet and overhead cabinet with some glass doors for storage of sterile items used in the treatment of patients. Medicine and dressing trolleys will be parked here. It is also used for safe keeping of drugs, medicines (except of the controlled drugs) and intravenous infusion packs and refrigerators for drugs or blood storage.

5. Dirty utility

This room will be conveniently located to serve the delivery rooms. It will house bedpans, vomiting bowls and urinals. A flusher disinfector should be provided. Gross washing of CSSD items for recycling will be carried out here. A jointless workbench with a sink for examining and washing placenta is required. Refrigerator to store placenta is also required.

6. Resuscitation bay

Certain newborn infants will be resuscitated and cared for in this bay. Mobile resuscitation equipment and a radiant warmer will be held here. The

bay has to be located at a centralised position for better access by all the delivery suites. There must be sufficient mechanical outlet and power points.

Sufficient under bench and overhead cabinets to store medication and equipment are necessary in this area. There must be clinical WHB. No utility sink is required.

7. Baby Washing/ assessment/ examination

A bay for washing and initial examination of the newborns will be provided close to the delivery rooms. There must be sufficient mechanical outlet and power points. Cabinets to store baby cleaning item and equipment in this area. There must be clinical WHB. No utility sink is required. It has to be located at a centralised position for all the delivery suites to use and near the staff base.

The length of worktop must be sufficient in order to provide area for handling the newborns and carrying out record writing.

8. Pantry

Meals and beverage will be plated here to serve to patients in the patient lounge or in the delivery suites. It is smaller than the pantry in the ward.

9. Stores

9.1 General

9.2 Equipment

9.2 Sterile

9.4 Linen (bay) - Supply of clean linen will be held on carts in built-in cupboards. Storage for pillows can be on overhead shelves.

(viii) Cleaner's room

This room is for cleaners to clean their mops and to store their cleaning tools. It requires dedicated cleaner's sink (not kitchen sink) and hook to hang the mops, brooms etc., and shelves to put the detergents or other small items. Disposal of dirty water is through cleaners sink. Exhaust ventilation is required.

(ix) Disposal room

As mentioned in the previous chapter with a pass-through cabinet system, i.e. the staff will put the waste through an internal cabinet door over a hatch into the room and the services staff will collect them on the other side of the cabinet through an external door. This is for security purposes.

(x) Trolley/Wheelchair park

Trolleys and wheelchairs will be parked here for the L&D use.

5.3.2.7 MANAGEMENT 7 HUMAN RESOURCE (STAFFING)

a) The Delivery Suite will be under the charge of the Medical Officer.

b) The Nursing Team will be managed by a Sister-in-charge assisted by other staff nurses, assistant nurses, mid-wives and female attendants.

c) A clerk receptionist will be at the Reception / Admission section.

d) Staff Area

(i) Staff change room (male/female)

Staff will keep their personal belongings here in their personal lockers. About 20 rectangle lockers (16 in female and 4 in male) will be provided. It will have one-way flow with separate clean and dirty entrance doors. It will be separated by anteroom to wet and dry area. Fittings are similar to standard change room. Shower shall be provided in cases of staff spilled with amniotic fluid or blood.

(ii) Doctor's room

For the doctors to write reports, rest, interview relatives, hold discussions, teaching sessions, etc.

(iii) Sister's office

For the day to day management by the sister in-charge.

(iv) Staff toilet

One unisex toilet needs to be provided within the working area.

(v) Staff rest room

Similar to standard staff rest room described in earlier chapters.

(vi) Prayer rooms (male/female)

Similar to standard prayer rooms described in earlier chapters.

(vii) On-call room

Similar to standard on-call room described in earlier chapters.

(viii) Seminar rooms

Similar to standard seminar rooms described in Emergency Department.

e) **Maternity OT**

1. Airlock/patient transfer
2. Staff Base
3. Holding Area

f) Operating Theatre Suite

1. OR
2. Scrub up room
3. Induction Room
4. Sterile Preparation Area/Lay up
5. Wash up disposal
6. Exit Bay

7. Recovery Area
8. Baby resus area
9. Clean utility
10. Dirty utility

g) Storage/support area

1. Equipment store
2. Equipment room
3. Sterile store
4. Disposal hold

h) Staff facilities

1. Staff change
2. On call
3. Sisters office
4. Doctors office
5. Musolla
6. Anaethestist

5.3 DIAGNOSTIC AND TREATMENT SERVICES

5.3.3 NUCLEAR MEDICINE UNIT

5.3.3.1 FUNCTIONAL DESCRIPTION

a) The Nuclear Medicine Unit will provide diagnostic and therapeutic nuclear medicine services for patients requiring specific tests or treatment using radio-isotopes. These patients include those with cancer, thyroid and renal diseases, specific cardiac problems, gastro-intestinal bleeds, etc. Most patients will be referred form the clinics or wards of the IIUM Hospital. However, referrals from other outside institutions are to be expected.

b) Profile of patients needing NM facilities

(i) Patients would have been seen before by other doctors and deemed to require diagnostic or therapeutic nuclear medicine services.

(ii) Patients will come from all age groups.

(iii) Most patients will be ambulant, while a few may require wheelchairs or trolleys.

(iv) Patient treatment maybe for in-patients and outpatients.

(v) Some individual patients may have repeated visits.

c) The nuclear medicine services are divided into 4:-

(i) Nuclear medicine clinic.

(ii) Nuclear medicine therapy.

(iii) Diagnostic Nuclear Medicine Investigations.

(iv) Teaching and Research.

5.3.3.2 OPERATIONAL POLICIES

a) Hours of Operation

The nuclear medicine unit shall provide radioactive iodine ward service for 24 hours daily. Nuclear Medicine investigations will be provided during office hours. Emergency services may be provided for urgent cases such as profuse gastro-intestinal bleeding.

b) Nuclear medicine services will be provided under the supervision of physicians or radiologists with training in the use of radio-isotopes. These specialists or a medical officer of the unit shall review special request/referrals for nuclear medicine services (example lung v/q study, GIT bleed study, etc). Urgent and non-urgent referrals will be given the appropriate appointment.

c) The type of diagnostic nuclear medicine investigation shall be in line with the overall national nuclear medicine service policy and shall be implemented in phases upon the recommendation by the Head of Nuclear Medicine services, Ministry of Health and the Head of Nuclear Medicine Department in Putrajaya Hospital.

d) Nuclear waste disposal will be done properly, and the national guidelines and regulations shall be adhered to.

e) Medical Records will be available for each patient attending the NM Unit as outpatients or inpatients. Each patient's investigation or treatment (including treatment plan) shall be documented.

f) Infection Control policies will be adhered to including

appropriate disposal of general, biological and cytotoxic wastes.

5.3.3.3 WORKLOAD

5.3.3.4 LOCATIONAL FACTORS

5.3.3.5 PLANNING CONCEPT

a) Radiation protection regulation shall be adhered to strictly, in line with ICRP guidelines.

b) The Unit will provide a pleasant environment for both staff and patients.

c) The Unit is preferably located adjacent to the specialist clinic and be easily accessible.

d) Ready and easy access to Pharmacy, Radiology and Pathology Departments are desirable, to fulfil service and training needs..

e) Easy road access is required for patient arriving by ambulance, public bus or private vehicle.

f) The wall and doors of the Unit shall be painted with high quality washable paint.

g) Worktable top shall have smooth laminated finish. Areas for work with radioactive materials should have a smooth and non-absorbent surface, preferably made of metal.

5.3.3.6 WORKFLOW AND FUNCTION OF SPACE

a) WORK FLOW

b) FUNCTION OF SPACE

(i) Nuclear Medicine Clinic

1. Reception Desk Patient shall be received here to have their visits and personal data registered.
2. Patient Waiting Area, adjacent to the Reception area, should provide enough space for about 20 people.
3. Administration Office
4. Patient Record Room.
5. Clinical examination room - 2 rooms.
6. Blood taking area.
7. Public toilet (male and female).

(ii) Nuclear medicine therapy

1. Ward
   - 1.1 Isolation rooms - 12 rooms, each with an attached ensuite.
   - 1.2 Delay tanks/decay tanks for radioactive waste disposal – able to cope with planned patient capacity.
   - 1.3 RAI administration room complete with separate dose calibrator.

2. Special treatment rooms for outpatient treatment;
   - 2.1 Radioiodine administration
   - 2.2 Radiosynovectomy, injection of

yttrium zevalin

(iii) Diagnostic Nuclear Medicine

1. Gamma camera room

1 room is required for imaging using a gamma camera. It shall be built according to manufacturer's recommendation and be large enough to accommodate a stretcher. All rooms should have their own separate power supply and stabilizers and be equipped with intercom and or telephone communication. Consideration for extraction of radioactive gases should also be taken into consideration when dealing with such materials.

2. **Computer control room** for processing of studies and archiving of data. This room shall support the gamma camera rooms.

3. Stress lab Nuclear cardiology

Nuclear cardiology assessment stress studies shall be done here. It shall be equipped with treadmills and pharmacological nuclear cardiology assessment. Drug and life support facilities should be available in cases of emergency, and should include an ECG machine, and an emergency trolley, etc.

4. Hot Lab

Radiopharmaceutical laboratory for preparation of each the following:

4.1 Radio-pharmaceuticals for diagnostic

Nuclear Medicine Investigations

4.2 Radiopharmaceuticals for Nuclear Medicine therapy.

There shall be a separate area (with laminar flow cabinet) for radio labelling.

5. Physics lab

Minor maintenance of some of the equipment used by physicists shall be done here.

6. Store

6.1 Store for radioactive materials.

6.2 Store for non-radioactive substances.

7. Radioactive waste room

A separate enclosed area is required with the appropriate facilities for radioactive waste to decay prior to its disposal as normal waste.

This is essential in term of radiation protection for the operators and the environment.

8. Shower room for decontamination

This is necessary should someone be accidentally spilled with radioactive material.

9. Non Imaging Nuclear Medicine room

This room shall house equipments for items, example well-counter, probe, computer systems, printers and accessories as well examination couch for patients.

10. Radioimmunoassay (RIA) Lab
    Special room example for additional functional tests such as Carbon-14 breath test.

(iv) Storage and Support

1. Film store
2. Equipment store
3. General store
4. Close to the Unit's administrative area
5. Clean utility
6. Linen bay

(v) Patient areas

1.
    atient counselling room
    This room is to be used for clerking of patients and also for doctor-patient discussions regarding any matters requiring explanation.

2. Patient changing rooms
    This room shall be near to the nuclear cardiology stress area and the room housing the Gamma Camera.

3. Observation area for post stress patients,when necessary

4. Patient Toilets (Male & Female)
    This needs to be separated from the toilet for the staff as the urine/excreta from patient will be radioactive. This should be

disabled friendly.

5. Injection room
   Patient shall be prepared here prior to scan. Injection of the radioactive material is carried out in this room.

6. Pre-radiopharmaceutical injection waiting area with room for 10 patients.

7. Post-radiopharmaceutical injection waiting area/room for 6 patients.
   Patient who have had the radio-pharmaceutical agents administered is radioactive. In some procedures patients are scanned ~3 hours before-imaging. Isolation of patients in this room is required to minimize radiation exposure to staff and other waiting patients.

8. Special waiting area/room - (separate from above) for patients on trolleys or babies in incubators (post-injection of radio-pharmaceutical) who need to wait for delayed scans e.g. HIDA study, Tagged RBC GIT bleed study.

(vi) Staff area

1. Conference room
   This room is to be used for inter-departmental conferences, consultations with physician and surgical colleagues and support activities for nuclear medicine staff. Space for image viewing, computers and

auxiliary equipment such as local area networks (LANs) should be provided. A mini library or reading room with and internet access and other teaching aids should be made available adjacent to the Conference Room.

2. Reporting room (for 8 persons)
   This room is for reviewing and reporting of images following the tests. The room should be equipped with TV monitors that are linked with the imaging cameras so as to enable the images to be transferred to this room for service and training. Decision for further views or scans and preliminary reporting are to be done here.

(vii) Administration offices

1. General office – an open office area for at least 3 staff to carry out clerical work
2. Room for Head of Unit (1)
3. Specialist rooms (2)
4. Medical officer's common office – for up to 4 doctors
5. Room for Medical Physicist (1)
6. Room for a Radiopharmacist (1)
7. Room for the Chief Technologist (1)
8. Support staff common office – 2 rooms
   - 8.1 Scientific staff– 2
   - 8.2 Radiopharmacists – 2
   - 8.3 Technologist – 6
9. Staff locker rooms (male & female)
10. Patient Records Room
11. Staff toilet (male & female)

Need to be separate from that used by patients to avoid unnecessary radioactive exposure from the radioactive urine/excreta from the patients

(viii) Staff Rest Room

This is necessary, as the staff need to start work early in the morning (before 7.30am) to calibrate the machine, prepare the radiopharmaceuticals before the scanning can begin. The staff are also required to work during lunch as the radioactive decay is continuous and procedures cannot be stopped during lunch break. Pantry facilities should be available (microwave, sink, refrigerator, chairs and table, etc).

(ix) **Musolla (male & female)**

5.3.3.7 MANAGEMENT & HUMAN RESOURCES(STAFFING)

5.3.3.8 APPLICATION OF WHILE HOSPITAL POLICIES

5.3.3.9 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

5.3.3.10 SPACE PROVISION

(refer suggested Schedule of Accormmodation in the appendix)

5.3 DIAGNOSTIC AND TREATMENT SERVICES

5.3.4 RADIOLOGY DEPARTMENT

5.3.4.1 FUNCTIONAL DESCRPTION

a) The imaging services in the IIUM Hospital will provide diagnostic and minimal interventional services to all the clinical disciplines through:

b) Outpatient services (including the Emergency and Daycare Centres)

c) Inpatient services.

d) The imaging department will be equipped with sophisticated equipment to serve the needs of the above disciplines. In line with the computerisation of patient's information system, digital imaging and Picture Archiving and Communication System (PACS) will be implemented in IIUM Hospital, as part of a Total Hospital Information System.

e) Sufficient numbers of high resolution monitors shall be provided at critical areas of the hospital e.g. ICU, OT, specialist clinics, wards, emergency department, etc.

f) For patients who are being referred to IIUM Hospital with previous films, (e.g. in emergency department or specialist clinics) there should preferably be provision to digitise the films immediately.

g) The Imaging Department will also provide for the training of undergraduate and postgraduate students, and on the job training for staff.

5.3.4.2 OPERATIONAL POLICIES

a) The imaging department will serve all the disciplines for both in-patients and outpatients.

b) The department will be fully operational during office hours, and will perform general radiological examinations and specialised procedures. After office hours, there will be on-call services to provide for urgent radiological procedures, e.g. Ultrasound, CT, and MRI, angiography, etc.

c) Other Imaging facilities should be made available in other Departments, e.g. the Emergency Department, Ambulatory Day Care Centre, etc. At the Emergency Department this will include ceiling-suspended X-Ray units and mobile X-Ray Units to cater for the critically ill patients.

d) There will be mobile X-Ray units available for wards, OT, ICU, etc.

5.3.4.3 WORKLOAD

5.3.4.4 LOCATIONAL FACTORS

5.3.4.5 PLANNING & DESIGN CONCEPT

The department should be situated near the Emergency Department on the Ground Floor, and· should be easily accessible to the Specialist Clinics and Wards.

5.3.4.6 WORK FLOW AND FUNCTION OF SPACES

a) WORKFLOW

(i) Patient Flow:

1. Patients or their companions will report to the reception-cum-registration area, where computerised registration is performed, and patient data captured. They may be ambulatory patients, and patients on stretchers or wheelchairs.

2. From the reception, the patient will be directed to the various sub-waiting areas outside the appropriate examination rooms.

3. Following the examination, patients have to wait until the radiographic images are processed and checked for optimal diagnostic quality. Additional examinations may be required.

4. Once checked, patients will leave the department, and return to the wards or out-patient departments, those who are non-ambulatory will be wheeled or stretchered, accompanied by the appropriate medical personnel.

(ii) Staff Flow.

1. Uniformed Staff will change from outdoor clothes to their day uniforms upon reporting for duty. Changing room and lockers will be provided.

2. Each individual will then head to his/her workstation for that day. The major activities will include general administration, patient registration, radiographic and radiological

procedures, film processing, film viewing and reporting, despatching of reports, and QA and audit activities, etc

(iii) Material flow

1. In the IIUM Hospital which is to be fully equipped with PACS, the necessity for X-Ray films will be reduced, although a minimal number may still be required.
2. The main material will include disposable items used in radiological procedures – catheters, needles, contrast material, dressing packs, etc. These need to be stored in appropriate areas in the Department.
3. Once the examination is completed, the images will be reported at specific reporting areas, and the reports or digital images will be transmitted to the relevant stations and referring doctors or clinics in the Hospital.

b) FUNCTION OF SPACES

(i) Zones

Based on the functional zones, the Radiology Department will be divided into the following zones according to the specified proportion (percentage) of available floor space:

1. Patient zone (15%)
2. Examination zone (40%)
3. Central Reporting zone (15%)

4. Administration zone (10%)

5. Personnel zone (10%)

6. Teaching / Training /Meeting zone (10%)

Types of machine for services to be provided are in the proposed equipment list as in **Appendix 1** of this brief.

(ii). Entrance / Reception area.

1 Reception / Record Area

This area will be the where patients are formally received for registration and computerised data collection. It should be close to the Main Entrance to the Department. There should be a counter for this purpose. A Record Room should be located within direct and easy access of the Reception area.

2. Main waiting area.

This is the main waiting space for patients and their companions. It should be adjacent to the reception area close to the entrance of the department.

3 Waiting Area for Non-Ambulatory Patients on Trolleys and Wheelchairs.

An area separate from the main waiting area should be provided for patients on beds, trolleys and wheelchairs to wait before their examination. This area also serves as a holding area for the patients while they wait at the end of their

examinations to be returned to the wards or units. Adequate circulation space will be required for those attending to the patients, and for additional equipment on trolleys. This waiting area should be connected to the circulation space and should be observable from the reception point. Curtains should be provided for privacy where appropriate.

4 Toilets

4.1 Public (Male and Female)

4.2 For the disable persons (Male and Female)

4.3 Staff (Male and Female)

(iii) Radiodiagnostic Area

1 Sub-waiting Areas.

Sub-waiting areas will be provided adjacent to the relevant radiology rooms. Each space should normally serve no more than 2 diagnostic examination rooms.

2. Changing cubicles.

Each radiology examination room should be provided with a changing cubicle, with an entrance from the waiting area and a door opening to the examination room. It should provide facilities for patients to dress and undress in privacy and for secure storage of clothing and personal items during their examination. A wall mirror is an additional

requirement.

(iv) Diagnostic Examination Rooms.

These rooms can be categorised as general purpose rooms and specialised rooms. Diagnostic room location should relate to the type of examination to be performed in them. This is to minimize unnecessary patient and staff traffic. The room with high patient through-put should be nearer to the reception area, and those for more protracted procedures the furthest away. Each of these rooms will have dedicated equipment as in the **Appendix 1.** All diagnostic rooms need control consoles, computers and work stations for the various modalities.

(v) Preparation Rooms.

A separate room for the preparation of the contrast media (injectables, barium, etc) will be provided adjacent to the appropriate angiography, CT, MRI, intravenous urography (IVU) and fluoroscopy rooms.

(vi) Recovery Bay.

A holding and recovery area will be required for patients on beds or trolleys who are recovering from anaesthetics, angiographic and contrast examinations including those who have contrast side-effects. At least 10 couches / beds will be provided and each bed should be able to be curtained off for privacy. One fully monitored bed will be for patients who have had coronary angiography and cardiac catheterizations. The bay should be located within easy visibility of staff

working area / nursing bay, and clean and dirty utility rooms. Emergency resuscitation equipment (ECG machine, Emergency trolleyshould be based here.

(**vii) Lavage room**.

A lavage room with toilet facilities suitable for both ambulant and trolley patient should be provided for those patients who require a colonic lavage. All lavage rooms should be conveniently located close to fluoroscopy rooms.

(**viii) Nurse station.**

This should be close to the Recovery Area so that nursing staff are able to keep watch over the patients here.

(ix) Internal & Central Staff Corridor

There should be available an internal staff corridor connecting with all the Radiodiagnostic & Procedure Rooms, for easy work flow

(x**) Public toilet** (male, female and disabled)

(**xi) Staff toilets** (Male, Female)

(xii) Reporting & Central Printer area.

1. **Daylight processing area for Printers.**
2. **Viewing & sorting area.**
3. **Reporting Rooms**

   Equipped with workstations with DICOM-compatible high resolution monitors, computers, printers, and CD burning facilities. Automatic multi-viewers (for old

analogue films that the patient may come with) should also be available here.

(xiii) Film Digitiser Room.

(xiv) Support/storage area

1. Clean utility

2. Dirty utility

3. Stores :

3.1 Film store

3.2 Linen store

3.3 Store for Disposable nursing items (close to the Nursing station)

3.4 Equipment store

3.5 General store

4. Cleaners' room.

5. Disposal room

6. Mobile X-Ray parking bay

(xv) Staff Facilities

1. Staff Changing Areas.

For male and female staff with lockers and toilets (male & female).

2. Offices.

2.1 Radiologist's offices (15)

2.2 Radiographers' office (for Chief Radiographer – (1)

2.3 Radigrapher common office (25 persons' capacity)

2.4 Chief Physicist (1)

2.5 Science & Research Office (1 common room- 5 persons)

2.6 General Administration office cum

Staff Record Room (Open space with partitions)

(xvi) Staff Rest Room with pantry facilities for 20 persons at one time (male/female).

(x**vii) Staff Meeting Room** (30 capacity).

(xviii**) On-call rooms (6**) with shower and toilet facilities.

(x**ix) Staff toilets** (male & female)

(xx) Musolla (male and female)

(xxi) Teaching & Training Facilities

1. Resource Room – Digital Film Library, Printer, Computers
2. Post-Graduate Trainee Room with cubicles for 20 persons.
3. Seminar Room (for 50 capacity)
4. Tutorial Rooms (for 10 persons; 4 in number)
5. All rooms to be equipped with projectors, wall screens and other AV aids, and TV monitors
6. Toilets (male & female)

(xxii) Miscellaneous Requirements:

1. VIP room
2. Facility and space for Remote Anaesthesia:
3. Pipelines for anaesthetic gases within the (CT, MRI and Angiography Rooms)
4. Adequate space for anaesthetic trolleys

5.3.5.7 MANAGEMENT & HUMAN RESOURCES(STAFFING)

5.3.5.8 APPLICATION OF WHOLE HOSPITAL POLICIES

5.3.5.9 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

5.3.5.10 SPACE PROVISIONS

(Refer suggested Schedule of Accommodation in the Appendix)

Appendix 1

QUANTITY	TYPE OF MACHINE AND THE SERVICE
1	CT Scan (128 slices MSCT),
1	MRI 3 Tesla
5	C arm biplane
2	X - rays
5	Ultrasound Scan
5	Echo Machine

Digital Imaging and P ACS

a) As part of the HIS, RIS and PACS, the work process which includes patient registration, patient tracking, scheduling of examination, film management, transcription, master file maintenance and report should all be computerised.

b) All the patient information, reports and images can be retrieved from the computer. It will be made available to all the wards and clinics by retrieving from the HIS, RIS and PACS and displayed on the computer monitors at appropriate sites in the Hospital.

Diagnostic Imaging equipment for Independent Units, remote from the Imaging Department:

It is necessary to provide separate and independent units i.e.

a) Emergency Department.

1. One Digital Radiography Unit (Static)
2. Ceiling suspended General x-ray machines
3. 1 digitizer to digitize X-ray films brought in from outside

b) Specialist Clinic.

If the Specialist clinics are located away from the Imaging Department, a separate General X-Ray machine is required. A digitizer is required to digitize X-Ray films brought in by patients

from other health facilities.

c) Day Care.
2 Fluoroscopy machines are required for the endoscopic rooms for ERCP and Urology.

d) 1 C-arm machine is required in the pacemaker room.

e) Mobile C-Arms

OT	4 (Orthopaedic, Urology, Neurosurgery)
ICU/CCU	1

h) Mobile X-Ray Units

General wards	1 machine per floor or shared if between 4 wards (depending on building design)
OT Complex	1
HDU/ICU/ NICU	1 (to be shared if design permits) 1

g) Ultrasound (to refer to individual department briefs)

5.3 DIAGNOSTIC AND TREATMENT SERVICES

5.3.5 PATHOLOGY DEPARTMENT (LABORATORY MEDICINE)

5.3.5.1 FUNCTIONAL AND DESCRIPTION

a. The **pathology department** of IIUM Hospital will provide comprehensive consultative and diagnostic services for the hospital. The blood donation centre of the department should be easily accessible to the general public

The department should be sited strategically, e.g. in a central location for easy accessibility to the main entrance, the main lift to the Emergency Department, all wards,

clinics, intensive care wards, OT and day care areas via a mechanical transportation system and computer linkage.

b. The objectives of the Department:

(i) To provide an effective, efficient, comprehensive and reliable diagnostic pathology service for medical care.

(ii) To ensure the scope, standard and capability of the pathology service meet clinical needs, and the technology used should be state of art, appropriate and cost-effective.

(iii) To conduct relevant research and development.

(iv) The Department shall be one of the major postgraduate training centres for doctors preparing for specialization course in anatomic pathology, haematopathology, chemical pathology and microbiology (includes bacteriology, parasitology, immunology and virology).

5.3.5.2 SCOPE OF SERVICES

The Department of Pathology/Laboratory Medicine shall comprise of:

a) Clinical Chemistry Division
b) Haematology Division
c) Blood Transfusion Service
d) Blood Donation Centre
e) Molecular Diagnostic Division
f) Histopathology and Cytology Division
g) Microbiology Division
h) Pharmacology/Drug Toxicology division
i) Laboratory Administration

The laboratories will be fully computerised, offering a comprehensive range of laboratory tests. The tests include routine, stat (emergency), and specialized tests.

The laboratories shall operate 24 hours a day with a full staff-strength from Mondays to Fridays and reduced staff strength on Saturdays, Sundays, public holidays and after-office hours. Specialised requests are not performed after office hours.

The following services will be made available at the pathology department.

a) CLINICAL CHEMISTRY DIVISION

(i) This division includes routine, STAT and specialized chemistries that shall provide complete blood and all body fluids analysis. They include:

1. Renal profile
2. Liver profile
3. Cardiac profile
4. Lipid profile
5. Glucose & diabetic profile
6. Blood gas analysis
7. Enzymology
8. Tumour markers
9. Trace elements
10. Hormone assays
11. Functional tests
12. Metabolic test

(ii) Specialised lipid studies, e.g. lipoprotein

electrophoresis, lipoprotein (a), lipoprotein lipase, apoproteins A, B, C, E, etc.

(iii) Inborn errors of metabolism, e.g. analysis of amino acids, fatty acids, organic acids and sugars, glucose-6-phosphatase, debranching enzyme, branching enzyme, etc.

(iv) Specific Proteins eg: Bence Jones protein, microalbumin, etc

b) **HAEMATOLOGY DIVISION**

Haematology Laboratory shall offer a comprehensive range of routine and specialised haematological investigations.

(i) Routine haematological tests;-
e.g, full blood count, blood film morphology, reticulocyte count, ESR, routine coagulation tests such as PT, APTT and others.

(ii) Special investigations:-

1. for diagnosis of leukaemia, red cell membrane disorders, haemoglobinopathies, thalassaemia, Klehauer test and others.
2. Haemoglobin analysis/Thalassaemia screening.
3. Flowcytometry & immunophenotyping, bone marrow aspiration and trephine examination, haemoglobin analysis and others. CD4 and CD8 enumeration and cell sorting.
4. Specilized Coagulation services - special investigations for bleeding and thrombotic disorders such as D-Dimer , Fibrinogen, Factor VIII and IX activities, Lupus anticoagulant and others.

c) **BLOOD TRANSFUSION SERVICES**

(i) The blood transfusion services include:

1. Routine blood bank testing: blood cross-matching, Coomb's Test and blood grouping.
2. Specialized blood bank testing: Antibody identification, auto haemolysis test and grouping for specific RBC antigens.
3. Tests for suspected transfusion reactions.
4. Preparation of blood and blood companents.
5. Storage of blood and blood components and issuance of blood products.

d) **BLOOD DONATION CENTRE**

(i) Collection of blood (only on a small scale basis)

(ii) Collection of specific components shall be the core service of this centre. (Apheresis donor)

(iii) This centre shall also provide the apheretic services for therapeutic apheresis when necessary.

e) **CYTOGENETIC AND MOLECULAR DIAGNOSTIC DIVISION**

(i) Cytogenetic tests include:

Chromosomal investigations for acute and chronic leukaemia, inherited diseases, syndromic congenital abnormalities etc.

(ii) Molecular diagnostic tests include:

1. Molecular analaysis for Acute & Chronic Leukemias (Bcr Abl, PML/RARA,JAK2 etc)

2. Coagulation Disorders (Intron 22 Inversionin Haemophiliac, Prothrombin G20210, Factor V leiden etc)

3. Haemoglobinopathies – Deletion and points mutaion of β and α thalassaemia. Molecular confirmation of other types of haemoglobinopathies.

4. Specific molecular analysis for solid cancers (as diagnostic or prognostic markers eg p53-deletion, BRCA, MSH etc)

5. Others

f) **HISTOPATHOLOGY DIVISION.**

(i) The division consists of three main sections. The sections are: histopathology, cytopathology and the forensic medicine.

1. Routine diagnostic service based on haematoxylin and eosin stained slides, histochemistry and immunohistochemistry.
2. Frozen biopsy-essential for rapid intra-operative diagnosis and management of malignant cases.
3. Immunofluorescent microscopy - essential for renal/skin biopsies.
4. Enzyme histochemistry - necessary for muscle biopsies and in rectal biopsies for Hirschspung's disease.
5. Morphometry for quantitative measurement of nuclear size and nuclear DNA content to define the pre-malignant lesions.

(ii) The cytology services include:

1. Fine needle aspiration cytology.
2. Exfoliative cytology.
3. Gynaecologic cytology (cervical PAP smear).
4. Non-gynaecologic cytology (sputum, body fluids).

(iii) Mortuary / Forensic Pathology services include: *(to provide separate unit)*

1. To provide for storage of bodies
2. To provide for final rites and preparation for burial
3. To perform clinical autopsies for hospital patients and for storage of bodies.

(Refer to 5.3.7 Mortuary & Forensic Services)

g) **MICROBIOLOGY DIVISION.**

(i) The microbiology division consists of five main separated units, the bacteriology, parasitology, virology, immunology and molecular diagnostic. Among the services for bacteriology and virology diagnosis includes:

1. Routine microbiological services: culture/sensitivity/staining.
2. Automated systems for the following services:-
   - 2.1 Blood culture, antibiotic MIC, microbial identification, mycobacterial culture and sensitivity.
3. Rapid diagnostic tests for microbes and bacterial antigens in body fluids, e.g. immunodot for S. typhi, gas chromatography for anaerobes latex/particle agglutination for

N.gonorrhoea.

4. Immunofluorescence microscopy e.g. for *chlamydia* and *pneumocystis carinii*.
5. Immunofluorescent microscopy, e.g. Respiratory Syncytial virus, Herpes Simplex.
6. Latex Agglutination, e. g.. Rotavirus.
7. Haemagglutination Inhibition test, e.g. Rubella.
8. Enzyme Immunoassays, e.g. HIV, Hepatitis
9. Complement Fixation test e.g. Measles and Mumps.
10. Immunodot/blot, e.g. HIV, Dengue.
11. Viral isolation (tissue culture)

(ii) The immunology section of Microbiology Division shall also offer services such as:

1. Lymphocyte transformation test.
2. Mixed lymphocyte culture.
3. Fluorescent antibody assay.
4. Auto-antibodies.
5. HLA typing.
6. itroblue tetrazolium test.
7. hagocytic function tests
8. llergic Workup – skin prick tests, total &
9. Other immunological tests.

(iii) The parasitology section shall offer the following test:

1. Stool for Ova and Cyst

2. Malarial thick and thin blood film.
3. Others

(iv) The molecular section shall offer test for molecular detection of some pathogens. The tests include:

1. Dengue virus PCR (qualitative)
2. Hepatitis B virus load (Quantitative)
3. Hepatitis C virus load (Quantitative)
4. Others

h) **PHARMACOLOGY /DRUG TOXICOLOGY DIVISION.**

(i) Drugs assays: Morphine, Cannabis, Amphetamine, Barbiturate, Benzodiazepine, Cocaine, etc.

(ii) Toxicology tests - alcohol, poisons, toxins etc.

5.3.5.2 OPERATIONAL POLICIES

a) The department of pathology will provide comprehensive diagnostic services for patient care at tertiary level for IIUM Hospital.

b) Location:

The department should be strategically located within the hospital complex to service all the clinical disciplines in an effective manner.

c) Work flow:

(i) Design and layout

There are two concepts of laboratory design to be implemented in this department. The first concept, the open laboratory which is suitable for integrated lab where all the automated analyzers shall be placed. The second which is the specialized

segregated laboratory is dedicated for other specialized works in the respective divisions.

(ii) Open concept laboratory

The design and physical layout of the laboratory will be based on the open concept where ever possible, to maximize the utilization of equipment and space. This will entail the usage of a common laboratory space by several activities of a similar nature previously carried out separately by the different divisions in the department. Modular and total automation systems should be placed in this laboratory. This **Integrated laboratory** shall accommodate majority of automation analyses carried out by the Clinical chemistry division, Haematology division and Microbiology division.

The open concept laboratory shall be made **visible** from outside. Thus,at least 2/3 of the wall shall be transparent to the public.

The laboratory space should be adequate for back-up analysers and other equipments.

(iii) Segregated Laboratories for specialized work

Certain activities will have to be segregated due to security and biological safety reasons as well as due to the highly specialised nature of the work involved. Furthermore, the open/integrated system may be compromised in certain circumstances by the sheer workload and personnel movement and circulation. The laboratories include:

1. Haematology specialized laboratory (Large Open concept laboratory)
2. Chemistry specialized laboratory (Open

concept Laboratory)

3. Microbiology laboratories (Specific and Dedicated)
4. Molecular Diagnostic laboratories (Open, specific and dedicated laboratories)
5. Blood transfusion services (Specific and dedicated)
6. Histopathology division (Specific and dedicated)
7. Toxicology/Pharmacology Division (Open concept

(iv) Central specimen reception area

Specimens from wards, clinics, operation theatre etc, are received at the central specimen reception area. From here the specimen will be sorted using automated specimen processor. Specimens will then be distributed to the common intergrated lab and various specialized laboratories for processing and analysis. Mechanically operated conveyor/pneumatic tube system should be used to transfer specimens to the reception counter. Conveyor system should then be used to transfer the sorted specimen to the specific laboratory destination.

(v) Separate specimen reception and waiting area

The blood transfusion service shall require a waiting area and separate specimen reception.

(vi) Integration of total laboratory automation (TLA) and laboratory information system (LIS).

The laboratory will be fully computerised with linkage to all users. There should be no/very minimal manual documentation in Integrated Laboratory since the

Total Laboratory Automation system is already incorporated in the modular analysers. The information shall be automatically linked to the laboratory information system (LIS). Some manual documentation and data entry into the LIS network is expected in specialized laboratories. There should be mutual integration of these two systems into the total hospital information system.

5.3.5.3 WORKLOAD

It shall depend on the attendance of the emergency cases at Emergency department and outpatient clinic, bed occupancy in the ward, delivery cases at Labour and Delivery suites and number of surgeries done in the OT.

Teaching as per curricula for medical.allied health and nursing students

5.3.5.4 LOCATIONAL FACTORS

5.3.5.5 PLANNING & DESIGN CONCEPTS

a) The Pathology Department is an area of fast evolving/changing technology. In view of this, the design must be flexible to allow for maximum expansion in all areas.

b) The Pathology Department will be located near to the Outpatient Clinic and Emergency Department.

c) It should be away from the main traffic lines.

d) It should be easily accessible to the medical store.

e) The functional areas provided should be sufficiently spacious for staff, machines and circulation. The design of the area must be of the open and modular concept and be sufficiently flexible to allow for maximum utilisation of space and for staff circulation. Staff safety should be considered.

f) The department will have a central reception for all specimens delivered by porters or by staff.

g) Area for blood donation activities should be separated from the working areas.

h) General administrative area and staff facilities should be provided and away from the working areas.

i) All **laboratory doors** should **be floor anchored swing doors.** For areas deemed as potential or high-risk fire hazard areas, the doors shall be fire rated.

j) **Benches' top** should be of chemical resistant, anti-corrosive and water proof. The bench should be raised off the floor for ease of cleaning and cleanliness. Height of bench shall not be less than **850mm.**

5.3.5.6 WORKFLOW AND FUNCTION OF SPACES

a) **Central Reception area:**

(i) General Reception & Enquiries

(ii) High risk Reception

(iii) Security Reception

(iv) Separate reception area for blood transfusion services.

This area is to accommodate specimen reception through a mechanically operated specimen transport system, e.g. Pneumatic Tube or Conveyor Belt. The bar-coded specimens are documented via computers. The specimens are then sorted and distributed to the various divisions within the Department, this time preferably with conveyor system.

Separate reception with waiting area is needed for blood transfusion service.

b**) Common Preparation Area:**

(i) Specimen spinning

(ii) Tube / Container preparation

(iii) Distilled / De-ionised water preparation

(iv) Simple Reagent Preparation.

c) Large Integrated Automated Laboratory to encompass the modular systems that comprises the automated services offered by clinical chemistry division, haematology division and microbiology division.

Dedicated rooms for senior officers and laboratory managers shall be placed inside this integrated laboratory.

Other functional rooms include:

1. Chemical storage.
2. Cold room (4^0 C) and Freezer areas
3. Preparation area with safety cabinet
4. Common staff and On Call rooms with attached toilets. (Male and Female), Lockers etc

d) Specialized laboratories

(i) **Clinical chemistry** specialized laboratory

This laboratory should cover areas for these analyses:

1. Specialised Lipid Studies section.
2. Inborn Errors of Metabolism section.
3. Endocrinology section
4. Enzymology section.

(ii) There must be dedicated rooms

1. for senior staff and laboratory managers.
2. Common staff room

3. Chemical room
4. Glassware room
5. Cold room

e) HISPATHOLOGY DIVISION.

(i) Main Histopathology Laboratory with the following sections:

1. Grossing
2. tissue processing
3. embedding,
4. sectioning,
5. haematoxylin eosin staining, mounting,
6. frozen biopsy, and gross specimen photography.
7. Store for tissue, tissue blocks and slides.
8. Multiviewer room
9. Specialist rooms with microscope
10. There must be dedicated rooms
    - 10.1 For senior staff and laboratory managers.
    - 10.2 Common staff room
    - 10.3 Gross specimen store
    - 10.4 Chemical room
    - 10.5 Glassware room
    - 10.6 Cold room

(ii) **Section in Cytology laboratory** includes:

1. Preparation Laboratory
2. FNAC Clinic (4 person capacity)
3. Slide Store Room
4. Store for reagents and consumables
5. Multiviewer room

6. Specialist rooms with microscope.
1. T
here must be dedicated rooms
7. for senior staff and laboratory managers.
8. Common staff room

(iii)

Chemical room

1. Glassware room
2. Cold room

.

f) Microbiology Division

There must be dedicated section for the following:

(i) Main Bacteriology Laboratory with for the following section:

1. Diagnostic lab,
2. Preparation lab
3. Sterilization lab
4. Others

(ii) Immunology laboratories (3 lab)

(iii) Parasitolgy laboratories (2 lab)

(iv) Virology laboratories (3 lab)

(v) Molecular laboratories (2 lab)

(vi) Mycology/TB Rooms

(vii) Walk-in Cold Room

(viii) Walk-in Incubator

(ix) Equipment Area

(x) Dark Room for Fluorescent Microscopy

(xi) Media/Reagent Preparation

(xii) Nosocomial Infection Control Section

(xiii) On Call Room

(xiv) Washing & Decontamination

(xv) Store (daily requirements)

(xvi) There must be dedicated rooms:

1. for senior staff and laboratory managers.
2. Common staff room
3. Chemical room
4. Glassware room

g) Haematology Division

(i) This specialized laboratory should have the following sections:

1. Specialised laboratory for Haemoglobin analysis, Red Cell Enzyme studies etc.
2. Microscopy room.
3. Coagulation laboratory
4. Section for specialized haematology tests such as BMA stain, Full blood film, other special tests

(ii) There must be dedicated rooms

1. for senior staff and laboratory managers.
2. Multiviewers room
3. Specialist rooms with microscope
4. Common staff room
5. Chemical room
6. Glassware room
7. Reagent store.

h) Cytogenetic and molecular division.

(i) The following sections and laboratories should be included:

1. Culture room
2. Harvesting room
3. Incubator area
4. Staining room
5. Dark room
6. DNA extraction room
7. RNA extraction room
8. PCR room
9. RT-PCR room
10. Post PCR room
11. Resource room
12. Storage rooms
13. Laser microdissection room
14. Image analysis room
15. Pre proteomic section
16. Post proteomic section
17. Autoclave and centrifuge room

(ii) Blood transfusion service

1. The following sections should be included:
2. Reception area
3. Waiting area.
4. Main transfusion testing lab.
5. Components processing lab
6. Screened storage section
7. Unscreened storage section
8. Platalet storage area

(iii) There must be dedicated rooms

1. for senior staff and laboratory managers.
2. Common staff room
3. On call room with attached toilets (male and female)

4. Chemical room
5. Reagents room

i) Drug & toxicology Division

(i) Specimen processing room.
(ii) Main Drug & Toxicology Laboratory.
(iii) Special instrument room, e.g.. for GC/MS/MS etc.
(Iv) Quality Control Preparation Room.
(v) File Room with TV monitors.
(vi) Consumable store
1. Chemical store.
2. Security requirements at entrance.
3. Freezer Room shall be provided for the storage of specimens for medico-legal purposes.

j) Quality Assurance Office.

(i) Infection control office.
(ii) General Store.
1. For domestic, consumable etc storage.
(iii) Glass store.
(iv) Smaller store.
For immediate daily usage.
(v) Fire proof store:
To store all inflammable items.

k) Washing/autoclave area:
Main washing area
Autoclaving area.
Disposal Holding Area.

l) Cleaner's room.

All areas will require the usual facilities for electric (emergency and

three phase power points), plumbing, lighting, gas and vacuum systems as well as positive pressure air conditioning/ventilation, venting systems, and other safety features. All laboratories should be equipped with outlets for fume hood, standard fire and laboratory safety equipment and fittings.

There should be sufficient rest rooms and prayer rooms (for male and female)

NOTE: There should be at least one service lift with large capacity to transfer equipment.

m) STAFF AREA

(i) Head of Department office:

1. Head of Department room including guest and meeting areas.
2. Personal Assistant (P.A)

(ii) Head of division's room, located in each division.

(iii) Specialist rooms.
Size of room is according to number of specialists.

(iv) Officer's room.

1. Postgraduate students - common work area for 40 persons
2. Scientific Officers- individual work space per laboratory (2 x 8 divisions)
3. Senior MLTs – individual work space per division (1 x 8 divisions)
4. Others.

(v) Seminar rooms (2) – to accommodate 30 -50 persons.

(vi) Meeting rooms (2) - to accommodate 20 staff.

(vii) Tutorial rooms (4).

(viii) Multi viewer rooms (2) for haematology and

histopathlogy room.

(ix) Reading Room / Resource centre

(x) Wash rooms/Toilets/Bathrooms - located near the main laboratories

(xi) Locker rooms (separate for male and female) - with attached bathrooms and toilets to be equipped with separate lockers for clean and dirty clothing.

(xii) Musolla for male and female

(xiii) Record Office and record store (fireproof)

(xiv) Printing room.

(xv) On-call rooms (4).

(xvi) Staff toilet (male /female)

n) **BLOOD DONATION CENTRE**

There will not be any routine blood collections/donations facilities on a large scale. However, an area for walk-in donor should be provided. Apheresis donation shall be the major activities of this centre Facilities should include the following:

(i) Reception , waiting and blood group testing area.

(ii) Interview room/examination.

One consultation and examination room will be provided where physical assessment of the donors will be done.

(iii) Blood donation room

There will be space for 4-5 donors to lie on couches during donation inclusive of four apheresis beds.

(iv) Donor rest room.
In this room, the blood donors can recover subsequent to blood donation.

(v) Site laboratory
Space for a work bench, centrifuge, water baths, dryers, refrigerators and freezers.

(vi) Pantry.

For the preparation of refreshments and light snacks for the blood donors, a pantry will be provided.

(vii) Clean utility.

(viii) Dirty utility.

(ix) Disposal Hold.

Items for disposal from various sections will be brought and kept here for collection prior to disposal

(x) Supervisor's office.

One small office will be provided for the Medical Officer and MLT in-charge.

(xi) Store:

Consumables, e.g. new blood packs will be stored here.

5.3.5.7 MANAGEMENT & HUMAN RESOURCE(STAFFING)

5.3.5.8 APPLICATION OF WHOLE HOSPITAL POLICIES

5.3.5.9 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

5.3.5.10 SPACE PROVISION

5.3 DIAGNOSTIC AND TREATMENT SERVICES

5.3.6 MORTUARY & FORENSIC SERVICES

5.3.6.1 FUNCTIONAL DESCRIPTION

The mortuary provides facilities for:

a) Conducting post-mostem examinations (autopsies).
b) Holding the body of decease in cold storage prior to being claimed by the family.
c) Religious and final rites prior to removal for burial or cremation.
d) Training of staff and police personnel in forensic medicine.

5.3.6.2. OPERATIONAL POLICIES (&PROCEDURES)

a) <u>Reception of Dead Bodies</u>

Dead bodies may be brought to the mortuary by:

- ward staff.

- hearse (from emergency and trauma department, another hospital or private sector)
- Police hearse.

b) Storage of Dead Bodies

(i) Dead bodies will be kept in cold storage for autopsy (if this cannot be performed early) and pending release to relations for burial/cremation.

(ii) There will be a separate compartment to store limbs before being handed over to relations or sent for cremation.

c) Post-mortem Services

(i) Post-mortems will be performed in the autopsy room.

(ii) Postmortems on inpatients who pass away will be performed by the attending doctor.

(iii) Medico-legal cases will be handled by the pathologist.

(iv) All specimens requiring histopathology, biochemistry or chemical analysis, will be sent to the respective departments.

d) Provision of Facilities for Religious Rites

Separate facilities will be provided for keeping dead bodies and performing autopsies, for muslims and non-muslims. In both sections facilities will be available for preparing bodies for burial.

e) .Disposal of Bodies

(i) Disposal of unclaimed bodies will be arranged by the hospital.

(ii) For bodies which are claimed, the relations will arrange for removal.

F) Training

Staff/students and police undergoing training in forensic medicine may need to view or observe post mortem procedures through a viewing panel.

5.3.6.3 WORKLOAD

Workload Summary (table form if applicable)

5.3.6.4 LOCATIONAL FACTORS

a) Priorities

(i) The mortuary should be sited away from patient areas, catering department and staff accommodation zone

(ii) It should be accessible from the wards via staff/patient hospital street and service lift which should be away from other service lines.

(iii) It should have its own access road with an area of hardstanding sufficiently large for 2 hearses to reverse. The access road should lead out of the hospital through the rear exit.

(iv) The areas should be provided with soft landscaping/garden and pleasant environment.

b) Departmental Relationship

(i) Close to Emergency Department

(ii) Through general circulation / patient/staff corridor/hospital street from other department.

(iii) The mortuary accepts dead bodies brought in (dead/dead on arrival cases) by the Police for autopsy or for storage until claimed by relations.

(iv) .Close to Pathology Department. Specimens collected during autopsy will be sent to the pathology

department for examination/tests or handed to the police personnel to be sent to the chemistry department.

(v) .Radiology Department staff may be called upon to perform X-rays when indicated.

5.3.6.5 PLANNING & DESIGN CONCEPTS

a) The planning and design of the facility should consider the discreet flow of the cadaver/deceased to the storage area either from the hospital, outside or dead on arrival. Infection control requirement should follow.

b) Individual design layout of the autopsy rooms should consider the viewing requirement for students in terms of placement of cameras/CCTV, apart from safety of the users,

c) Drainage system should adhere to the infection control guidelines, i.e. treat at source before discharge.

d) The mortuary should be design with pleasant and calming environment as the last respect to the dead.

5.3.6.6 WORK FLOW AND FUNCTION OF SPACES

a) WORKFLOW

(i) **Dead bodies**

1. Dead bodies may be brought from emergency and trauma department or from the wards by the ward staff through hospital street and service lift or by hospital hearse or police hearse. To the extent possible, bodies must be brought along the least used corridors or back corridors so that there is minimum exposure to the public, staff and patients. Once brought in, bodies are kept in the freezers until claimed by the relations for burial/cremation.

2. Bodies will be taken for the last rites in the facilities in the mortuary before being handed-over to the relations.

(ii) **Staff flow**

The staff will use a separate entrance. They will change into the attire provided and appropriate footwear before performing post-mortems.

(iii) Relatives/Visitors flow

1. Accompanying relatives will follow the decease from the ward to the mortuary and deal with the release of the death certificate.
2. Other relatives and visitors to the mortuary will access the mortuary through designated route and meet at the reception for the final rites.
3. Relatives attending to identify the decease will be ushered into a special room where they will be allowed to view and identify the decease.

(iv) Students' Flow

b) FUNCTION OF SPACES

(i). **Entrance and public areas**

1. Lobby, reception and waiting area.

2. Vehicle entrance with areas for receiving bodies.

3. Muslim lobby with facilities for Quran Reading. Relatives of the deceased will wait here.

4. Muslim bath and preparation area

Muslim bodies will be bathed here and proceeded with the religous rites (Kapan Mayat)

5 Mussola

6 Death Certification Issuance Counter and office
7 Non-muslim lobby
8 Non-muslim preparation area
9 Public toilet (male & female, disable)

(ii) **Body storage and post-mortem area**

1. Separate body storage spaces for muslims (22) and non-muslims (24) and foul body storage (4) on 2 tier freezers.
2. Separate body preparation areas for muslims and non-muslims with 2 post-mortem tables for each.
3. Three separate autopsy areas and post mortem tables for muslim (2 tables), non-muslim (2 tables) and decomposed body (1 table).
4. Staff change/airlock to autopsy room
5. Viewing area for muslims and non-muslims.
6. Viewing area for students
7. Observation area with view panel to all post-mortem areas.
8. Changing room with toilets and shower to all post-mortem areas.

(iii) **Cadaver laboratory**

Laboratory

With storage area for cadaver, post mortem area, storage area for equipment and booting/change areas.

(iv) **Support and storage areas**

1. Laboratory for anatomical study, adjacent to the post-mortem areas and fitted with a fume

cupboard.

2. Room for tissue grossing and processing. Equipped with fume cupboard.
3. Skeleton measurement and anthropology.
4. Dark room for photography.
5. Post mortem store room for storage of instruments.
6. Chemical store.
7. Linen store
8. Mass disaster store
9. Mobile X ray bay
10. Disposal Hold room
11. Cleaner's room

(v). **Staff area**

1. Interview and inquest area for police personnel.
2. Staff changing room with toilet and shower facilities.
3. Head of department office with subwait.
4. Single rooms for specialists (5)
5. Supervisor's office.
6. General office (4 people).
7. Record/file room for medicolegal documents.
8. Staff rest room with pantry facilities.
9. Staff toilets (male and female)
10. Staff Mussola.

5.3.6.7 MANAGEMENT & HUMAN RESOURCE (STAFFING)

a) The mortuary is under the charge of the pathologist.

b) There will be mortuary attendants to receive bodies, prepare them for post-mortems and store them in freezers.

c) The day-to-day running will be managed by the M.A. in-charge.

5.3.6.8 APPLICATION OF WHOLE HOSPITAL POLICIES

a) Patient/Staff/Student/Visitors

b) Logistic (Porterage and Transport)

c) Food/Catering

d) Linen

e) Security Services

f) Cleaning and Housekeeping Services

g) Sterile Supplies

h) Pharmaceutical

i) Medical and Non Medical Supplies and Storage

j) Disposal and Waste Handling

5.3.6.9 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

a) Air-Conditioning and Ventilation Requirements

(i) General Areas

(ii) Procedure Areas

(iii) Storage

b) Medical Gases

c) Electrical Supply

d) Lighting

e) Communications

f) Water Supply system

g) Drainage System

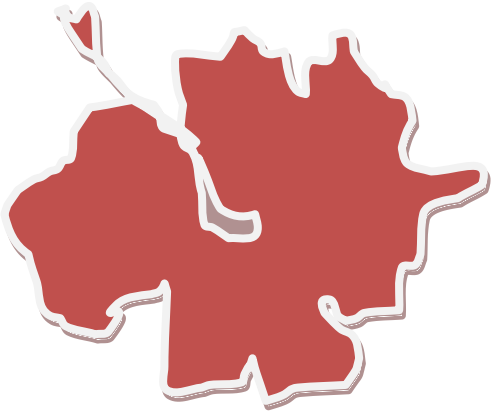
h) Fire Fighting and Protection/Prevention

i) Other Miscellaneous

5.3.6.10 SPACE PROVISION

(Refer suggested schedule of accommodation in the appendix)

5.4 The Medical Support Services



5.4.1 Pharmacy Department
5.4.2 Medical Social Worker and Counseling Services Unit
5.4.3 Central Sterile Supply Department (CSSD)

5.4 MEDICAL SUPPORT SERVICES

5.4.1 PHARMACY

5.4.1.1 FUNCTIONAL DESCRIPTION

a) The function of the department is to provide for the receipt, storage and preparation of specialised pharmaceutical products for distribution to wards via the satellite pharmacy departments and outpatient clinics. It will also provide patient counselling and drug information services to the staff of the hospital.

b) The pharmacy will exert control over the use of drugs within the hospital. As part of this objective, it will operate a unit of use system of supply to most users, though a number of specific departments will have to rely on a stock topping-up system. Common items like lotions and disinfectants will be supplied on floor-stock basis.

c) The pharmacist will provide an advisory service for medical and nursing staff.

d) The pharmacy will support the hospital, supplying wards, departments and supplying prescriptions for specialist clinics, emergency and trauma department and day care.

e) The pharmacy will not undertake a major manufacturing role. It will only prepare total parenteral nutrition (TPN) and specialised eye drops in sterile surroundings.

f) It will not provide radio-pharmaceutical preparations.

g) The pharmacy will do pre-packing of both liquid preparations

and tablets to suitable use size/packing.

h) Satellite pharmacies will be located at every floor (depending on the design). Each one will serve 4 wards.

i) There will be a drive through pharmacy counter for follow-up prescription.

j) Therapeutic drug monitoring will be performed by the pharmacy department.

k) Teaching & learning.

5.4.1.2 OPERATIONAL POLICIES

Basic principles

a) The pharmacy will be principally concerned with the dispensing of prescriptions for inpatient via the satellite pharmacies, outpatient treatments and preparation of some specialised products only.

b) Outpatient dispensing as described here will only serve the specialist clinics, emergency and trauma department and day care.

c) For the few departments holding drugs on a floor stock basis, the level of stock, the control arrangement, and the topping-up of stock will be under the control of trained pharmacy staff. Supplies to the ward and units will be made from the satellite pharmacies.

d) The main inpatient output of the pharmacy will be on a unit of use system. Supply to the wards will be made from the satellite pharmacies.

e) All deliveries from the pharmacy will be by pharmacy porters, and will be transported ill secure, returnable containers.

f) The pharmacy department's role therefore is to receive bulk supplies and to break these down for holding in the

dispensary. The inpatient supplies will be from a service counter for the supply to wards and departments of "one-off" items of an emergency or unusual nature.

g) A large volume of work will relate to prescriptions for patients from the specialist clinics and provision for this, including sufficient waiting space must be provided. A drug counselling room is required at the outpatient pharmacy area.

h) Security provision must be made for storing dangerous drugs.

5.4.1.3 WORKLOAD

Workload Summary (table form if applicable)

5.4.1.4 LOCATIONAL FACTORS

a) Priorities

b) Departmental Relationship Diagram

Fig 5.1.2 : 1 *(sequence in one dept brief)*

5.4.1.5 PLANNING & DESIGN CONCEPTS

a) T

he pharmacy is a major recipient of bulk supplies, and it also sends out from the hospital drug supplies to smaller units, as well as returning containers and vessels to manufacturers.

b) T

he bulk storage function therefore has the same general requirements for vehicular access as the general stores.

c) However, ‘apart from its obvious support for the inpatient wards, its main relationships are to the specialist clinics from which a large daily demand arises.

d) The department should be located for ease of access from the special clinics and provide waiting space for 90-100 outpatients at any one time.

e) Outpatients will draw their prescription at the dispensers counter. The large number of waiting outpatients implies a commensuratively large number of dispensers and some 20-25 dispensers will be at work backing-up the prescription counter. A double checking system is implemented before the drugs are dispensed to the outpatient.

f) Though not a major manufacturing unit the pharmacy will nevertheless include a moderate amount of work of this type as quantified earlier. The main specialised provision for carrying out this work is the sterile preparation area, where irrigation fluids will be prepared, special types of eye drops and IV additives will be manufactured. Up to ten people will work in this area.

g) Some of the direct patient care function, i.e. patient counselling will require to be easily accessed from the general circulation.

h) For some provisions such as the department stores - and especially the secure store - 'inaccessibility' from the outside

is a positive advantage.

5.4.1.6 WORK FLOW AND FUNCTION OF SPACES

a) WORKFLOW

(i) Description

1. Patient Flow

1.1 Emergency (Red)

1.2 Intermediate (Yellow)

1.3 Non Emergency (Green)

2. Staff Flow

3. Students' Flow

4. Relatives' Flow

5. Material Flow

(ii) Workflow Diagram

b) FUNCTION OF SPACES

(i) THE OUTPATIENT PHARMACY (located at PHC, Specialist Clinic)

The outpatient pharmacy will provide dispensing and medication counselling services to patients from the specialist outpatient clinics, day care centre and the emergency and trauma departments.

The outpatient pharmacy will comprise the following areas:

1. Dispensing areas

1.1 Patient waiting area

The area should be located directly in front of, or adjacent to the pharmacy service or dispensing counters.

1.2 Dispensing/service counter areas

Accommodation should be provided for computer terminals.

1.3 Prescriptions filling work area

This area is to be located next to the dispensing counter. There should be sufficient work-top benches and open racks to contain stackable bins for storing all items required immediately for the day's dispensing. This area caters to the main activities of filling the prescriptions, cross-checking of prescriptions, sticking of labels, etc.

1.4 Patient counselling rooms (2)

These rooms are intended to provide privacy for private counselling or interview of individual patients as well as to give professional advice.

1.5 Public toilets (male and female)

2. Support/storage areas

2.1 Liquid/syrup and extemporaneous preparations area.

This area is reserved for the compounding of special syrup preparations for paediatric use. It is also

used for the reconstitution of antibiotic suspensions from dried granular forms. Extemporaneous preparations in the form of lotions, creams and ointments of specific formulation will be prepared here.

2.2 Room for pre-packing of tablets/capsules

This section requires an enclosed room to prevent the tablet dust from contaminating other areas of the pharmacy. There should be sufficient space to accommodate at least 2 workers and 2 to 3 electronic tablet counting machines.

2.3 Dispensary sub-store

This store is required to stock supplies drawn from the hospital medical store and should have adequate space and facilities to keep a minimum of 2 weeks' stock of all the items required by the outpatient pharmacy.

2.4 Storage area for containers, labels, etc.

Sufficient storage area is required for storing the empty bottles, ointment boxes, envelopes, labels and other items used with the [mal dispensed products.

2.4.1 Records store

2.4.2 Clean utility

2.4.3 Dirty utility

2.4.4 Cleaner's room

2.4.5 Disposal room

3. Staff areas

3.1 Pharmacist's office

3.2 General office (for 4 personnel)

3.3 Staff rest room

3.4 Staff change room

3.5 Staff toilet

3.6 Prayer room (male & female)

(ii) THE INPATIENT PHARMACY

The inpatient pharmacy will encompass facilities for the distribution of pharmaceutical items to all users as well as provide storage facilities of a limited extent.

1. Preparation area

1.1 This room is intended for the preparation, filling and labelling of both solid and liquid pharmaceutical products for external use. It is also used for the preparation or repacking, filling and labelling of pharmaceutical products which are intended for oral use.

1.2 Tablet pre-packing room

For pre-packing and labelling of tablets.

2. Finished products store

2.1 Two stores will be provided for external preparation and internal preparation. These stores are intended to keep at least 2 weeks' supply of finished or repacked products' in final packs which are convenient for dispensing.

2.2 Cleaner's room

This room is intended for the storage of cleaning materials and equipment.

2.3 Distilled water area

2.4 Staff changing room

Separate changing rooms for male and female staff will be provided with toilet, shower and staff lockers.

3. Sterile products section

3.1. Eye drop production section

The manufacture of sterile products will be confined to specific items which are not available commercially, e.g. eye drops.

The following rooms or areas are required for this section:

3.1.1 Bottles preparation

The containers used for filling the drops will be prepared and passed into the filling room through a pass box.

3.1.2 Staff changing room

In this room, staff will change from 'factory clothing' into dust-free sterile gowns. This is termed the second change.

3.1.3 Air-lock

This area is required to prevent the aseptic filling room from being contaminated from the outside atmosphere. Staff will enter the

aseptic filling room through this area.

3.1.4 Components preparation room

This room is used for the preparation of the components including weighing and mixing. The ready mixed components and the containers and labels will be passed through a pass box into the aseptic filling room.

3.1.5 Aseptic filling room

In this room filling and filtration of the solutions will be carried out under aseptic condition.

3.2 Total parenteral nutrition (TPN) production service:

Preparation of TPN needs aseptic technique. The space requirements are:

3.2.1 Aseptic room

An area for 2 or 3 workers is required. Needs HEPA Filters.

3.2.2 Air-lock

3.2.3 Change room

For changing to lint-free clothings. Can be shared with the CDR section. Wash-up is required.

3.2.4 TPN component preparation

room.

3.3 Cytotoxic drug reconstitution section (CDR)

A room for sterile preparation using aseptic techniques. This room will have direct access from change room, and adjacent to the component preparation room.

4. Therapeutic drug monitoring (TDM)

5. Quality control room

In compliance with GMP requirements an in-process quality control (IPQC) laboratory must be made available.

6. Issue area

6.1 Trolley/medication cart parking area

6.2 Ward supply and dispensing area

This area will be concerned with the dispensing of pharmaceuticals to the wards and other user units and the unit of use drug delivery system and the traditional imprest stock (topping-up of stock) system.

6.3 Storage area

6.3.1 IV fluid store

6.3.2 Drug store

6.4 Pharmacist's office

6.5 Cleaner's room

7. Staff areas

7.1 The drug information services (DIS) centre

This centre provides drug information and

advice to both patients and staff of the hospital. This DIS Centre should be equipped with the following facilities:

7.1.1 computer with CD-Rom and laser printer

7.1.2 adequate telephone lines with modems

7.1.3 facsimile machine

7.1.4 photo duplicating facilities

7.1.5 storage racks and cabinets for reference books, journals, etc

7.1.6 adequate storage space for files, office supplies, EDP accessories.

Note: This room will also serve as the office of the pharmacist responsible for the DIS.

7.2 Pharmacists' office

7.2.1 The chief pharmacist with reception and waiting area.

7.2.2 Pharmacist i/c of inpatient dispensary, manufacturing unit, TPN, TDM and CDR sections.

7.3 Seminar room

To accommodate 20 persons.

7.4 General office for 4 personnel.

7.5 Staff rest room

One room should be provided for the staff to have their breaks. Facilities for the preparation of beverages and snacks should be provided. Lockers for storage of staff clothing and other personal effects should also be provided within this room.

7.6 Staff changes (male and female)

To be provided with attached toilet and shower.

8. Stores

8.1 Raw material store with staging room.

8.2 Weighing room

8.3 Empty bottles store

8.4 Bottles washing area

8.5 General store/packing material

8.6 Inflammable store

(III) SATELLITE PHARMACY

The satellite pharmacy should be located near to the wards and nursing units to which supplies are made through the unit of use drug delivery system. Each satellite pharmacy can serve 4 wards, preferably all from the same discipline or related disciplines. Each satellite pharmacy should not serve more than 2 floors of wards.

(iv) DRIVE THROUGH PHARMACY

The dispensing counter will be located along the thoroughfare, near patient parking area with good circulation within the hospital compound. Prescription will be prepared in the Department and conveyed via pneumatic tube/automation system to the Drive Through Pharmacy (DTP) upon request. There will two counters at the DTP centre. One will receive prescription and payment and another for collection. Security to DTP is required. Operation hours will be determine. 2 staff will attend the DTP on shift basis. A toilet, hand wash basin and solat area should be provided.

5.4.1.7 MANAGEMENT & HUMAN RESOURCE (STAFFING)

a) The pharmacy service will provide an overall 24-hour response. For the most part, it will provide normal working hours service, but there will be ‘on-call' arrangements both for acquisition of drugs and for acquisition of specialist pharmaceutical advice.

b) The department will be under the control of the chief pharmacist who will be supported by other trained pharmacists and assistants.

c) The department will have several dedicated porterage staff.

5.4.1.8 APPLICATION OF WHOLE HOSPITAL POLICIES

Whole hospital policies will apply.

a) Catering

Beverages are taken in the staff rest room.

b) Domestic services

1. A cleaner's room is provided for the department with, house cleaning materials and equipment. The provision is exclusive for the department and will not be shared with adjacent areas.

2. Sterile items and supplies will be provided to the pharmacy as necessary from the CSSD.

3. All time-expired and for disposal drugs must be returned to the pharmacy, into the charge of the charge of the pharmacist who will oversee their destruction by maceration or for smaller quantities of unused drugs by dilution and flushing into the drainage system.

5.4.1.9 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

a) Air-Conditioning and Ventilation Requirements

(i) General Areas

(ii) Procedure Areas

(iii) Aseptic Room

(iv) Cytotoxic /CDR

b) Medical Gases

c) Electrical Supply

d) Lighting

e) Communications

f) Water Supply system

g) Drainage System

h) Fire Fighting and Protection/Prevention

i) Other Miscellaneous

5.4.1.10 SPACE PROVISION

(Refer suggested Schedule of accommodation in the appendix)

5.4 MEDICAL SUPPORT SERVICES

5.4.2 MEDICAL SOCIAL WORKER AND COUNSELLING SERVICES UNIT

5.4.2.1 FUNCTIONAL DESCRIPTION

a) Medical Social worker will provide services to the patients and to the community. These services will include counseling of the patients on subjects such as marital problems, family therapy, emotional support, vocational guidance, practical assistance to the patients on discharge, social education and job placement, compensation claims, adoption service, home nursing and arrangement of accommodation, financial assistance to the patients in financial difficulty, fares as well as the application for funds from agencies.

b) The department also provide liaison of the hospital with other agencies.

c) The department provides feedback either through a social report or discussion during ward rounds especially about the environment, emotional and other social problems with the medical team to complete the whole process of the patient's

care. Privacy and confidentiality will be the underlying basis of this service.

5.4.2.2 OPERATIONAL POLICIES

a) Following cases will be referred to the department:
   (i) Unmarried mothers
   (ii) Rape and attempted suicide cases
   (iii) Battered children
   (iv) Battered women
   (v) Abandoned cases
   (vi) Terminally ill cases e.g: cancer
   (vii) Cases for material/ financial aid

b) Doctors will refer the patients to the respective department.

c) Most of the time, patients need to be accompanied by relatives or spouses.

d) Patients may be referred to other relevant agencies for further assistance.

5.4.2.3 WORKLOAD

The norm is 1 medico-social worker to 200 cases.

5.4.2.4 PLANNING & CONCEPT DESIGN

The department may be located adjacent to the main administration/ admission revenue area at the hospital. Counselling sessions will also be carried out at clinics or within the department.

5.4.2.5 SPACE REQUIREMENTS AND FUNCTION OF SPACES

a) Entrance

(i) Reception counter with filing facilities
(ii) Waiting area with space for wheelchair and trolleys too.
(iii) Public toilets (male and female).

b)

ounseling Area

(i) Counselling room accessible directly from the waiting area and the staff area, for 6 people in a settee-sitting set up in one corner, and interview table and chairs in another corner.
(ii) Pleasant environment required.

c) Staff Areas

(i) Office for the head of department (1) and open concept office for other officers (2 staffs).
(ii) Rest room with pantry facilities
(iii) Musolla
(iv) Staff toilet.

d) Support/ Storage Areas

(i) Cleaner's room- may share with Admission Unit.
(ii) Disposal room- may share with Admission Unit
(iii) General Store

5.4 MEDICAL SUPPORT SERVICES

5.4.3 CENTRAL STERILE SUPPLY DEPARTMENT (CSSD)

5.4.3.1 FUNCTIONAL DESCRIPTION

a) The CSSD will provide centralized sterilization services for the whole hospital and neighbouring health centres.

b) The purpose of CSSD will be to confine the skills and responsibility of the staff to the supply of sterile material (disposables and items to be recycled) and to minimize the risk of error.

c) The department will receive new materials clean linen from the linen store, and recycling items (e.g. surgical instruments) from the user departments. An initial rinsing of used instruments will be carried out in the user departments prior to dispatch to CSSD.

d) The CSSD will be responsible for inspection, disinfection and cleaning-up, packing, sterilizing, and temporary storage of all items to be re-used. New materials which need sterilisation before use will be stored in bulk-store before being packed, autoclaved and taken into the sterile store.

e) The delivery of used items and collection of the sterilized goods from CSSD will be carried out by the porters.

f) Cleaning, disinfecting and sterilising (low temperature sterilisation) of the anaesthetic, respiratory and haemodynamic equipment will be done separately in the respiratory and haemodynamic equipment unit (RHU).

5.4.3.2 OPERATIONAL POLICIES

5.4.3.3 WORKLOAD

The workload for CSSD will be generated from the operating theatres, wards, departments and clinics.

5.4.3.4 LOCATIONAL FACTORS

a) Priorities

(i) The CSSD should be central to all consumer areas of other facilities with direct or easy access to the operating Complex.

(ii) A separate service line has to be distinguished between clean and dirty corridor.

(iii) Internal and external access to the sterilising plant room should be provided.

b) Departmental Relationship

(i) Adjacent to OT Complex and other OTs of maternity, ED

(ii) Close by general service circulation to ICU, Wards and others.

(iii) Access from medical stores for new supplies.

5.4.3.5 PLANNING & DESIGN CONCEPTS

a) The CSSD will be designated to allow for one-way flow of materials in the sequence of activities to be carried out in the *process of sterilisation: reception - checking – washing/cleaning/drying - packing - sterilising - storing - issuing.*

b) The following essential planning criteria are to be taken into consideration:

i. The complete separation of the dirty/wet area from the clean area. This separation can be achieved by the use of pass-through washing machines, and by a dividing wall (preferably part glass to allow for observation by sister in-charge) with a pass-through hatch so that staff in the wet area cannot directly enter the clean packing area.

ii. Clean and dirty materials require separate reception points. The clean one serving the bulk store for new materials, and the dirty one serving the wet area where all instruments are washed, cleaned and dried.

iii. The immediate access between OT suite, day care OT and CSSD will be provided by dumb waiter if located at different levels or other direct means.

iv. The main packing area should adjoin the washing/cleaning/dry area to permit easy passage of washed and dried instruments.

v. The sterilisation area should adjoin the packing area. Adequate space should be provided at both ends of the autoclaves for the handling of trolleys in the

loading and unloading process. At the same time, this will prevent the staff working in the packing area being affected by steam generated by the autoclaves.

vi. The office of the sister in-charge should be located so as to enable observation of the main activity area i.e. the packing area and the washing area. The meeting room should adjoin this room.

vii. The sterile store should be separated from the packing and sterilisation areas completely. There should be an air lock entrance lobby with doors on both sides.

viii. Sterile issue should adjoin the sterile store.

ix. Provision of a pleasant ambience, preferably with natural daylight is required.

x. Provision of separate staff facilities (staff changing, prayer room and staff rest/pantry) in both, wet and clean sections of the department. A pleasant outlook for staff rest room is desirable.

5.4.3.6 WORK FLOW AND FUNCTION OF SPACES

a) WORKFLOW

(i) Description

1. Material flow (sterile supply system)

1.1 The CSSD will receive clean linen (e.g. drapes and gowns) from the linen store and new materials and bulk items such as gauze, cotton wool, packing paper

from the medical store. The bulk items will be received into the bulk store.

1.2 These clean materials require a separate reception point.

1.3 Returned soiled items (e.g. instruments from OTs) will be received and inspected at the reception of the wash area to ensure completeness of sets. Damaged instruments will be replaced. Complete sets will be passed to the clean-up area, where they will be sorted, soaked in disinfectant, washed (rinsed) and dried. Tubing, catheters and recycling needles will be flushed through thoroughly. They will be passed to the packing area for repacking as complete trays.

1.4 Gauze swabs, cotton wool balls, etc. will be produced in the swabs and dressing preparation area and then placed in sets. Following the preparation of the packs they will be loaded into baskets for transfer to the sterilisation area.

1.5 Instrument sets will be brought in on trolleys and held in the sterilisation area pending autoclaving. Double-ended autoclaves integrated with boiler are required for sterilisation. Following the sterilisation in the autoclaves, the sterile items will be held in the sterile store.

1.6 From the sterile store, sterile supplies will be issued to a trolley loading bay (sterile issue) for distribution.

1.7 The sterile supplies are transported between departments by the use of open or closed trolley systems with the latter (case carts) being the preferred system for OT suite supplies.

2. Respiratory and haemodynamic equipment (separate unit)

2.1 Dirty anaesthetic, respiratory and haemodynamic equipment will be dismantled in the respiratory and haemodynamic unit (RHU). These items will be sent to the CSSD for disinfection.

2.2 They will be washed and disinfected in the washing/disinfecting machines and then packed and brought to the sterilisation area and sterilised in the low temperature sterilisation unit (hydrogen peroxide and plasma sterilizer). The sterilised equipment will be temporarily stored in the sterile store before being returned back to the RHU to be reassembled and tested.

3. Staff Flow

3.1 Staff working in the clean areas will change in the changing rooms before entering their clean working areas.

3.2 Staff working in the wash-up area will use separate changing rooms before entering wet areas.

(ii) Workflow Diagram

b) FUNCTION OF SPACES

1. WET/DIRTY AREA

1.1 Entrance/reception area

1.1.1 <u>Reception and sorting area</u>

The reception area will receive the soiled instruments/goods into the department. Gross-washed OT sets will be received through a dumb waiter. Instruments will be inspected and the damaged instruments will be replaced. The used anaesthetic tubes from the RHU will also be received through this reception.

1.1.2 Trolley park

1.1.3 <u>Staff facilities</u>

The wet area will have its own facilities for the staff working on the dirty side of the department:

- <u>Staff changing</u>: Staff changing rooms for male and female staff will be provided. Here, staff will

change from outdoor clothes and footwear. Lockers will be provided for the storage of outdoor clothes. Showers/WC will be located in the changing rooms.

- Staff rest room/pantry: There will be a staff rest room with an adjacent pantry, available to all staff working in the wet area.
- Staff prayer room adjacent to the change room.

1.1.4 Disposal room

Dirty linen will be sorted out and placed in disposal room prior to collection.

2. CLEANING/WASHING/DRYING AREA:

2.1 Trolley wash bay

There will be an area for the washing-up of dirty trolleys. After the wash, trolley will be parked in the trolley bay.

2.2 Washing/cleaning/drying area

The checked and complete instrument sets will go through the mechanical washing, cleaning and drying process. This area should be able to accommodate the tunnel washer sterilisers, drying ovens and ultrasonic cleaners.

2.3 Detergent/disinfectant store

Bulk supplies of soap, detergent and disinfectant will be kept here.

2.4 Cleaner's room

This room will provide storage for cleaning materials and equipment to be used in the wet side. It will accommodate facilities for washing and space for drying the cleaning equipment.

3. CLEAN/DRY AREA:

This area will be completely segregated from the wash area. Pass-though tunnel washing disinfector will be used for the separation.

3.1 Reception/storage area

There will be a separate reception bay for clean linen supplies (ready-for-use items). These supplies will be received and checked here. The external packages will be removed in the medical stores prior to transport to the CSSD. After inspection they will be passed to the bulk store.

3.2 Receiving/pack breaking area

3.3 Main packing area

3.3.1 The instruments which have been washed and dried through the tunnel washer will be sorted. A main activity of packing, i.e. making up of instruments and operating sets will be done here.

3.3.2 Prepared packs will be stacked on worktops and later loaded into trolleys for transfer to the sterilisation area.

3.4 Steam sterilisation area (Autoclaving)

3.4.1 Sterilisation will be carried out by autoclaves using moist steam under pressure. The size of autoclaves should be able to accommodate the workload.

3.4.2 In this area, there should be sufficient space for manoeuvring the trolleys in the loading process and for allowing the autoclave loads to cool following autoclaving, before they are brought to the sterile store.

3.4.3 In this area autoclaving of packs and sets will be undertaken. They will be brought on trolleys and loaded into the autoclaves. Sterilised materials will be unloaded at the opposite end.

3.4.4 There will be separate low temperature sterilisation (plasma sterilizer) for the sterilisation of respiratory and haemodynamic equipment items and hot air sterilisation for certain materials.

4. STERILE/STORAGE/ISSUE AREA

4.1 Sterile store

Sterilised items will be kept here on shelves and will be drawn upon for issue. This store needs a large area to accommodate the needed sterilised supplies.

4.2 Sterile item issue area

Sterile supplies will be issued here on a top-up basis via central porterage to user departments. OT sets will be sent back by dumb waiter to the sterile store of the OT Complex

There will be a counter for holding sterile supplies to be issued.

4.3 Clean trolley hold

There will be a trolley bay for the clean trolleys into which sterile supplies will be loaded.

4.4 Cleaner's room

This room will provide storage for cleaner's trolley and equipment to be used in the clean side. It will accommodate facilities for washing and space for drying the cleaning equipments.

4.5 Disposal room

4.6 Porter's base

For porters who collect and supply CSSD supplies.

5. STAFF AREAS

5.1 Offices:
- Officer in-charge office
- Administration office

5.2 Meeting room

5.3 Staff change

5.4 Staff rest with pantry facilities.

5.5 Staff toilets (male and female).

5.6 Prayer room (male and female).
To be adjacent to the staff rest.

5.4.3.7 MANAGEMENT & HUMAN RESOURCE (STAFFING)

a) The CSSD will be headed by a Senior MA/Senior Sister. He/She will be assisted by staff nurses, assistant nurses, a clerk, autoclave operators and attendants.

b) The department will operate from 0800 to 1615 hours.

However, arrangements for urgent supplies required can be made.

5.4.3.8 APPLICATION OF WHOLE HOSPITAL POLICIES

a) Cleaning and housekeeping services

Cleaning will be undertaken by the private contractor. A cleaner's room with storage for cleaning materials and equipment will be provided. The room will have facilities for obtaining and disposing of water.

b) Linen supplies

Clean linen to be sterilised in the CSSD (gowns, theatre drapes, tray drapes, surgeon's towels, etc.) will be delivered by the contractor. The linen will be inspected by the contractor before being sent to CSSD and packed in the linen store.

c) Other supplies

Bulk supplies of items such as gauze, cotton wool, paper rolls etc. will be delivered by the medical store to the bulk store of the CSSD.

d) Porterage and transport services

The delivery and collection of the items to be recycled and sterilised will be carried out by the CSSD porters on topping-up basis.

e) Disposal and waste handling

A disposal room will provide a holding area for bagged items. They will be collected .by the contractor and brought to the central waste collection area.

5.4.3.9 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

a) Air-Conditioning and Ventilation Requirements

(i) General Areas

(ii) Procedure Areas

(iii) XXXXX

b) Medical Gases

c) Electrical Supply

d) Lighting

e) Communications

f) Water Supply system

g) Drainage System

h) Fire Fighting and Protection/Prevention

i) Other Miscellaneous

5.4.3.10 SPACE PROVISION

Refer suggested Schedule of accommodation in the appendix

5.4 THE MEDICAL SUPPORT SERVICES

5.4.4 REHABILITATION DEPARTMENT

Physiotherapy and Occupational Therapy Units.

5.4.4.1 FUNCTIONAL DESCRIPTION

a) The Rehabilitation Department will provide a comprehensive and integrated rehabilitation medicine service. It will function as the referral centre for medical rehabilitation care with the faculty/Kulliyyah of Allied Health Sciences. The joint scope of services includes medical rehabilitation for cardiac, amputees, head injury, orthopaedic and neurology cases.

b) The department with KAHS will develop rehabilitation program for patients to resettle in the community. Individuals who may not benefit from long period of medical rehabilitation will be referred to the social development and National Unity Ministry with recommendation for “long stay” homes while continuing involvement and liaison with the rehabilitation team if required.

c) The purpose of the department is to ensure the application of rehabilitation techniques to patients from the very early stage of their acute illness, so as to maximise the potential for full recovery and to diminish the period of physical

impairment.

d) The department will provide physiotherapy, occupational therapy and speech therapy facilities, facilities for "daily living" rehabilitation, a gymnasium and a hydrotherapy pool.

e) Rehabilitation for psychiatric patients which will be carried out separately in a psychiatric day care unit.

f) The department will provide education and training in the field of rehabilitation for undergraduate medical students, postgraduate professionals and undergraduate education and training of allied health science professionals such as speech therapist, rehabilitation engineers, prosthetists and orthotist, occupational therapist, physiotherapist and rehabilitation nurses.

g) The department will carry out research related to medical rehabilitation.

h) Long term rehabilitation programmes involving, for example, heavy workshops, will not be provided in the hospital but will be provided at Kulliyyah of Allied Sciences (KAHS).

5.4.4.2 OPERATIONAL PRINCIPLES

a) Basic Principles

The department is essentially an aggregation of diverse therapy staff in one location, linked by common purpose and sharing common management.

b) Operational Policies

The services of this department will be delivered mainly through the following areas:

(i) Physiotherapy unit

(ii) Occupational therapy unit

5.4.4.3 WORKLOAD

a) The workload of the department will be predominantly related to patients rehabilitation, health prevention and promotion as out-patients.

b) The extent of the out-patient workload will depend on the period of continued treatment which clinicians choose to maintain, but in general, a ratio of about 4-5 outpatients to one inpatient can be assumed.

5.4.4.4 LOCATIONAL FACTORS

a) The location of the department is in ACC and should be in relation to the main/ACC entrance or preferably with own access/entrance.
b) The location should have its own disable parking as well as drop off point for ease of distance
c) Easy access by means of main hospital street for the outpatient and discreet circulation for inpatient is required.

5.4.4.5 PLANNING AND DESIGN CONCEPTS

a) As the dominant element of the work related to out-patients, the location of the Department in relation to the main entrance, and to car parking, is central. Good access from all wards is also called for.

b) The level of infirmity of the patients attending must be recognised, so that short distances from the point of entry are achieved, and so that by creating a compact department around the reception area interdepartmental distances are minimised.

c) For similar reasons, level routes must be achieved without use of steps; shallow ramps may be used if necessary.

d) All Wcs should be of the "disabled" dimension allowing access by wheelchairs. Please note sports wheelchair that requires wider openings.

e) Doors in general within the Department should allow for easy wheelchair movement.

f) All surfaces should be non-slip, to assist patients on crutches, with sticks or simply those who are as yet insufficiently mobile.

g) The department will be conceived as a series of separate zones, clustered around the Administration and Staff Facilities.

h) The zones are :-

(i) Individual Patient Treatment i.e. Treatments in Treatment Cubicles, Wax Baths, UV Therapy

(ii) Group Therapy - Gymnasium and Hydrotherapy

(iii) Occupational Therapy

(iv) Rehabilitation for Daily Living

5.4.4.6 WORK FLOW AND FUNCTION OF SPACES

a) WORK FLOW

(i) Patients requiring hospitalisation will be admitted in the various wards.

(ii) Patients who need follow-up treatment or review will be seen at specialist clinics.

(iii) Patients for out–patients physiotherapy will wait in the waiting area until called for treatment.

(iv) Patients who need other treatment such as hydrotherapy, occupational therapy, aid to daily living, and the gymnasium, may be directed immediately to those sections.

(v) Refer 5.4.5.11 & 5.4.5.12 for respective unit work flow.

b) FUNCTION OF SPACES

Refer 5.4.5.11 for Physiotherapy

Refer 5.4.5.12 for Occupational Therapy

5.4.4.7 MANAGEMENT & HUMAN RESOURCE

a) The Department will operate from 0800 to 1615 basis.

b) The Physiotherapy Unit will be under the direction of a Physiotherapist whilst the Occupational Therapy Unit is under the direction of an Occupational Therapist.

c) The department will headed by a rehabilitation specialist. The management of the patients will be through team approach and multi-disciplinary approach with the involvement or rehabilitation specialists, doctors, nurses, physiotherapists, occupational therapists, medico-social workers, prosthetists, orthotist,etc

d) Refer 5.4.5.11 for Physiotherapy

e) Refer 5.4.5.12 for Occupational Therapy

5.4.4.8 APPLICATION OF WHOLE HOSPITAL POLICIES

a) **Catering**

Staff may take beverages in the staff rest room.

b) Domestic services

A cleaner's room is provided as the base for department cleaning by private contractor. It will store cleaning materials and equipment. Water supply and drainage will be provided.

c) **Linen**

Only small supplies of linen are required. These will be held in the linen store and topped up by the private contractor.

d) **Pharmaceuticals**

It is not intended that drugs be stored in the department, but oils and ointments which will be used are kept here and supplied from pharmacy.

e) **Sterile items**

The need for sterile items is likely to be very limited. It may be necessary to perform occasional dressings, and a limited stock of CSSD dressing packs will be held in the clean utility.

f) **Supplies**

General items will be supplied by the medical store as well as specific requirements, e.g. wax for wax bath replacement and replenishment.

g) **Disposal**

Disposal will follow the whole hospital policy and items for disposal will be placed in colour-coded containers and held in the disposal room until removal by the private contractor.

5.4.5.9 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

a) Air Conditioning And Ventilation

(i) Chilled water from central plant
(ii) .Air conditioning for comfort will be provided for the treatment and offices.
(iii) Use chilled water fan coil units. OA requirement for each fan coil unit should first be filtered and dehumidified to minimize 'wet coil' conditions in the fan coil unit.
(iv) 24 degree centrigrade DB adjustable, 55 % RH.
(v) Roughing filters.
(vi) Exhaust ventilation to cleaner, store, toilets, disposal, staff change, store, utility etc.
(vii) For the sterilisation e.g. cold sterilization, separate mechanical ventilation will be provided

b) Medical Gas

(i) Compressed air may be needed at workshop etc.

c) Electrical Supply

(i) Essential and non essential incoming submains.
(ii) distribution board with esseential and non essential sections.
(iii) Adequate power sockets strategically located (refer to MOH guidelines)

d) Lighting

(i) To MOH standard illumination levels.

(ii) Self contained exit and emergency lights to high level as per Australian Standards.

(iii) Communication

1. Telephone point to all occupied spaces
2. Total Hospital Information System (Refer to 5.7.5).

e) Water Supply System

(i) Hot water for the department will be produced and reticulated from the hospital's central calorifier plant.

(ii) Hot water supply of 60oC wiil be provided for:

(iii) all clinical basins and laboratory benches such as in histopathology, biochemistry, microbiology and blood bank..

(iv) clean and dirty utility.

(v) Laboratory sink.

(vi) All shower points,s taff wash basins and pantry.

(vii) All equipment requiring such services. (please refer to MOH guidelines - Provision of domestic hot water supply)

(viii) All patients shower and basins.

(ix) Cold water will be provided for all basins, scrub-up troughs, WC's and all equipment and facilities requiring such services.

(x) Each laboratory bench will be provided with hot/cold water supply wall/floor connections and then distributed as required.

f) Drainage Services

(i) Drainage services will be provided for all basins, sinks, WC's and equipment and facilities requiring such facilities.

(ii) Drainage services will be designed to suit the particular equipment (eg chemical resistant where film processing effluent is invloved) with ease of acess and minimal disruptions in case of blockages being an essential feature.

(iii) Drainage services for the laboratory equipment will have to be provided to suit the particular equipment and processes.

g) Fire Fighting and Protection Services

(i) These will be provided in accordance with the present Building By Laws Of Malaysia, pending the final approval of the local Fire Fghting Authorities.

(ii) Among the facilities proposed to be provided for this department are:

(iii) portable fire extingiushers mounted in strategic locations.

(iv) automatic sprinkler systems.

(v) break glass alarm points.

(vi) alarm annunciators/alarm bells.

(vii) hose reel system.

(viii) self-contained signal point indicators.

(ix) The department's fire protection facilities will need to be intergrated in th overall buildings fire fighting system infrastructure.

(x) The fire detection system will be connected to the building's central fire alarm panel and building management system for central handling.

(xi) Other Miscellaneous Services

1. Clock to all other staff-occuppied spaces.
2. Specific engineering requirements will be apply to met the standards such as handicapped patients and workshops etc.

h) Building Automation System

The Rehabilitation will be fully integrated BAS with monitoring and remote control for all parameters of the air conditioning system, fire protection system, electrical supply system, communication system, plumbing including hot and cold water system.

5.4.5.10 SPACE PROVISIONS

Refer 5.4.5.10 For Physiotherapy Unit and 5.4.5.11 for Occupational Therapy Unit.

5.4.5.11 PHYSIOTHERAPY UNIT

a) **Operational Policies**

(i) The unit supports the departments and administratively it will have its own head of unit.

(ii) The unit will operate from 8.00 am. to 5.00p.m. The staff will be on-call duty for only intensive care wards and high dependency ward.

b) **Function of Unit**

(i) The unit is responsible for providing services to patients from the very early stage of their acute illness so as to maximise the potential for full recovery, diminish the period of physical impairment and help attain the best possible quality of life.

(ii) Services will be provided for both in and out patients which will include out patients clinics, peripheral hospitals, and private practitioners.

(iii) The patient management includes preventive care, health promotion, and physical rehabilitation, as well as patient education.

(iv) The unit will serve as a training ground for

physiotherapy students and trained physiotherapists from other states in selective specialised areas.

c. **Services**

(i) Physiotherapy services will be provided to inpatients and outpatients for all disciplines. For the inpatients, most of them are treated in the respective wards. Patients who need to be treated with electrotherapeutic modalities and are stable medically, will be brought to the department for the purpose. For patients who have improved and need further physiotherapy intervention in an outpatient setting, e.g. gymnasium, will be brought for the purpose.

(ii) Treatment consists of one or a combination of the following:

1. Chest physiotherapy.
2. Musclo-Skeletal Physiotherapy
3. Neurological Physiotherapy
4. Pediatric Physiotherapy
5. Men and women Health
6. Special treatment techniques like Manual Therapy, PNF, Mobilisation with Movements etc
7. Prescription of home programme exercise.
8. Patient education and counseling.

d. **Estimated Workload**

(i) The inpatient workload of the unit will come predominantly from the demands of all the different disciplines in the

hospital.

(ii) The outpatient workload will be related to patients:

1. continuing their rehabilitation which has been initiated during their inpatient stay.
2. who are referred from peripheral clinics and require out patient physiotherapy.
3. who are referred for specific education programmes from all clinics.
4. who require support group therapy, e.g. post mastectomy and incontinent patients.

e. Patient Flow

(i) Patients will either be brought from the wards to the department or arrive at the outpatient's entrance and come unaided or in a wheelchair to the reception counter.

(ii) Patients requiring heat and thermal therapy, and phototherapy will wait in a nearby sub wait until called for treatment.

(iii) Other patients with appointment for gymnasium and hydrotherapy will be directed immediately to the respective areas.

(iv) On completion of the treatment session for the day, inpatients will be taken back to the wards by their respective ward attendants, while outpatients may return home.

f) **Space Requirements**

(i) **Entrance**

1. Entrance lobby
2. Reception counter/records/revenue collection.

3. Main waiting for patients.
4. Wheelchair and trolley bay
5. Patient's toilets

(ii) Staff area

1. Head of department office with sub wait.
2. Open office for the physiotherapist.
3. General office for 3-4 personnel
4. Staff change room (male and female).
5. May be shared with occupational therapy unit.
   5.1 Seminar room to accommodate 25 people.
6. Staff rest room with pantry facilities.
7. Prayer room (male and female).
8. Staff toilets (male and female).

(iii) **Patient Treatment Areas**

1. Patient education and special protocol exercise room
2. Pediatrics treatment area:
   2.1 Sub wait area
   2.2 2 assessment rooms
   2.3 5 treatment cubicles
   2.4 Toilets for children
3. Postural drainage room (2)
4. Wax room (next to hand therapy room)
5. Hand therapy room
6. Electrotherapy

6.1 Sub wait area

6.2 Assessment rooms (2)

6.3 High frequency rooms (6)

6.4 Low/medium frequency rooms (4)

6.5 Ultra-violet treatment room (1)

7. Mechanical therapy for cervical and lumbar traction.

8. Diagnostic, special tests and manual therapy cubicles.

9. Walled rooms with doors for laser therapy.

10. Mean and Women Health Rooms (2)

11. VIP treatment area with waiting area.

12. Relaxation Therapy Room (Snoozelan)

13. Phototherapy room for the following functions:

13.1	open area	1
13.2	general UVL	1
13.3	local UVL	1
13.4	PUVA	1
13.5	Waldman	1

(iv) **Support/Storage Area**

1. Stores :-

1.1 General/Material

1.2 Equipment

1.3 Linen

2 Clean utility

3 Dirty utility

4 Disposal room

5 Cleaner's room

(v) **Hydrotherapy Area**

1. Assessment room
2. Hydrotherapy pool - able to accommodate a group of 20 people for group exercise.
3. Whirlpool (2 cubicles with partition)
4. Rest area for patiets.
5. Showers and changing rooms with lockers for patient and staff.
6. Treatment plant
7. Staff base area
8. Equipment store
9. Wheelchair and trolley parking bay
10. Chemical store

(vi) **Gymnasium Area**

1. Patient change (male & female)
2. Assessment rooms

   Separate room for adults and children.

3. Gymnasium (separate areas for adults and children)

   This will provide a range of exercise options for the therapist undertaking group work. It will have wall bars, climbing ropes, mats for mat exercises, small sets of steps and major and minor exercising apparatus, e.g. weight machines and medicine balls of various weights.

The gymnasium will have a store for items when not in use, e.g. mats. The gymnasium will have special areas for assessment of patients and manual therapy rooms. Patients' privacy needs to be ensured.

The gymnasium will have designated areas to keep special high technology equipment.

4. Equipment store (2) **IT**

g) Occupational therapy supports the rehabilitation department and administratively it is headed by the occupational therapist.

h) Function of spaces:

(i). **Entrance**

1. Entrance lobby and waiting area

   For about 10 patients and relatives.

2 Reception/Registration and revenue collection (*Can be adjacent to the physiotherapy reception*).

3. Main waiting area

   Including waiting for patients on wheelchair and trolleys (l5 pts)

4. Patient's toilets (Disable, male & female)

(ii) **Staff Area**

1. Office

   1.1 For head of occupational therapy (1)

   1.2 Open office for the occupational therapist.

   1.3 General office for 2 - 3 personnel

2. Seminar room

   To accommodate 25 persons.

3. Staff change (may be shared with physiotherapy unit)

4. Staff rest with pantry facilities.

5. Prayer rooms (male and female)
6. Staff toilets (male and female).

(iii) **Patient/Treatment Area**

1. Concentrated functional treatment area with work simulator.
2. Functional skill lab I (upper limb) - 1 room
3. Equipment and wheelchair for about 15 pts.
4. Functional skill lab II (lower limb) - 1 room
5. Large equipment, wheel chair, furniture, trolleys and for about 10 patients
6. Activities of daily living room include assessment (3)
7. The room will consist of:-

7.1 Bed room - 1 patient, 1 therapist, 1 relative, with bed transfer equipment.

7.2 Bath room - bath 1 shower/sink toilet seat/ mobility equipment/rails.

To accommodate 1 patient, 1 therapist and 1 relative.

7.3 Kitchen - complete kitchen work surface, sinks, oven etc., 2-3 patients, 1 therapist.

(vi) Splinting room

Work surface, wet and dry areas, sinks, equipment, bed, wheelchair, trolleys and for about 3 patients, 2 staff, and relatives.

(vii) Pressure garment

Work surface, sewing equipment, changing and fitting areas. For 2 patients and 2 therapists.

(viii) Paediatrics therapy room (children under 3 years) - 1 room

3 children, 3 parents. 2-3 staff, equipment, paeds wheelchair, floor mats/tables, toys and storage space.

(ix) Pediatrics play room (children 3 yrs.+) - 1 room

3 children, 3 parents, 2-3 staff large equipment, paeds. wheelchair, play space and storage space.

(x) Functional pediatrics' training toilet

For 1 patient, 1 parent and 1 therapist.

(xi) Therapy garden

Outdoors activities for children and adults landscaped and walking/jogging tracks with multipurpose courts (basketball/netball/badminton/volleyball).

(xii) Work hardening room for functional assessment eg. driving

i) **Support/storage areas**

(i) Stores

1. General
2. Linen
3. Equipment
4. Material

(ii) Dirty utility

(iii) Clean utility

(iv) Disposal room

(v) Cleaner's room

5.4 MEDICAL SUPPORT SERVICES

5.4.5 RESPIRATORY AND HAEMODYNAMIC EQUIPMENT UNIT

5.4.5.1 FUNCTIONAL DESCRIPTION

To co-ordinate the use, maintenance and management of respiratory and haemodynamic monitoring equipment in user departments (intensive care wards, HDW, and others).

a. Ensure·availability of correct respiratory and. haemodynamic monitoring equipment and relevant consumables for OT and ICU use.

b. To set and operate life support and monitoring of ICU patients when requested. Provide constant and regular monitoring of the various parameters measured at the patient's bedside and make necessary recommendations to

doctor in-charge.

c. Inspect, test and calibrate various OT and intensive care equipments so that they are in proper operating conditions at all times.

d. Cleaning and disinfecting all respiratory therapy and haemodynamic monitoring equipment from intensive care wards and OT and sterilisation of small accessories will be done in this unit.

5.4.5.2 OPERATIONAL POLICIES

a. A centralised respiratory therapy and haemodynamic service will be provided by this unit.

b. Consumables, disposables, and spare parts of all these equipments will be stored in this unit.

c. The medical assistant in consultation with the various specialist/medical officers will be responsible for the selection and assignment of proper equipment to each patient within the scope of service.

d. Trouble shooting and minor repairs will be carried out by medical assistants. Major breakdown will be referred to engineering maintenance.

e. Sterilisation of accessories will be carried out by the unit. However, low temperature sterilisation for tubings will be done in the CSSD.

5.4.5.3 WORKLOAD

5.4.5.4 LOCATIONAL FACTORS

a) Priorities

(i) It should be adjacent to intensive care wards and

easily accessible to OT.

(ii) Service lines to CSSD should be easily accessible.

b) Departmental Relationship

It receives equipment from the various operating theatres and all intensive care wards including the HDW.

5.4.5.5 PLANNING AND DESIGN CONCEPTS

a) The working area should be separated into a clean and a dirty area. Facilities will be provided for decontamination space, parking ventilator and pigeon holes for storing spare parts/accessories.

b) In view of the large number of ventilators available in the hospital (OTs and intensive care areas), the unit will need adequate space for its working environment.

c) Medical gases, electrical and vacuum outlets should be provided for carrying out testing and maintenance procedures, i.e.:

(i) Compressed air outlets

(ii) O_2 outlets

(iii) N_2O outlets

(iv) Vacuum ·outlets

(v) Electrical sockets.

5.4.5.6 WORK FLOW AND FUNCTION OF SPACES

a) WORKFLOW

(i) Description

1. Patient Flow

1.1 Emergency (Red)

1.2 Intermediate (Yellow)

1.3 Non Emergency (Green)

2. Staff Flow

3. Students' Flow

4. Relatives' Flow

5. Material Flow

(ii) Workflow Diagram

b) FUNCTION OF SPACES

(i) Wet/dirty area

1. Receiving area

   Ventilators will be received here.

2. Dismantling area

   Space to be provided for parking of ventilators awaiting washing.

3. Washing and drying area.

   Washing facilities, e.g. worktop and sinks to be provided here.

(ii) Dry/Clean area

1. Space to be provided for parking clean ventilators.
2. Space for sterilisation of small parts/accessories.

(iii) Receiving area

1. Parking area
2. Gas sterilising zone

   2.1 Aeration room

   2.2 Assembly and calibration room

c) **Issue area**

d) Support/storage area

(i) Store for equipment, tubings and consumables items.

(ii) Cleaner's room

(iii) Disposal room

(iv) Porter's room

f) Staff area

(i) Supervisor's office

(ii) Technician room

(iii) Staff rest room with pantry facilities

(iv) Staff change room

(v) Staff toilets

5.4.5.7 MANAGEMENT & HUMAN RESOURCE (STAFFING)

A team of medical assistants and attendants who are trained in the care and maintenance of the above equipment will run the day-to-day management.

5.4.5.8 APPLICATION OF WHOLE HOSPITAL POLICIES

a) Patient/Staff/Student/Visitors

b) Logistic (Porterage and Transport)

c) Food/Catering

d) Linen

e) Security Services

f) Cleaning and Housekeeping Services

g) Sterile Supplies

h) Pharmaceutical

i) Medical and Non Medical Supplies and Storage

j) Disposal and Waste Handling

5.4.5.9 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

a) Air-Conditioning and Ventilation Requirements

(i) General Areas

b) Medical Gases

c) Electrical Supply

d) Lighting

e) Communications

f) Water Supply system

g) Drainage System

h) Fire Fighting and Protection/Prevention

i) Other Miscellaneous

5.4.5.10 SPACE PROVISION

5.4 MEDICAL SUPPORT SERVICES

5.4.6 HOSPITAL MEDICAL STORE

5.4.6.1 FUNCTIONAL DESCRIPTION

The hospital medical store purchases, holds and issues medical and non-medical items to the other departments of the hospital. It is a component of the pharmaceutical and supplies service.

5.4.6.2 SERVICES PROVIDED

a) **Purchasing/indenting stocks**

The medical store will be responsible for purchasing

medical and non-medical items for the needs of the entire hospital except for the supply of food.

b) **Reception and holding of stocks**

The store will receive all the stocks indented for, unpack and store them pending issue.

c) **Store management and inventory control**

(i) Analysis of stock requirement, turnover and budgetary implications will be done to ensure supply of the correct items in adequate amounts when required. The user department will be advised on the types and optimum amounts of stocks to be indented and held.

(ii) As part of the hospital information system, the functioning activity will be computerised.

d) **Issue of items**

The store will supply user departments on a regular basis with allowance for emergency requirements.

5.4.6.3 OPERATIONAL PROCEDURES

a) **Indenting stocks**

On a routine basis, indents for stocks are done according to contract schedule. However for urgent requirements, additional indents may be made at any time.

b) **Amount of stocks held**

On the whole, the store will be keeping 2-4 months' supply at any one time.

c) **Handling of stocks**

(i) Most items will arrive in lorries and vans. These will be unloaded, sorted and checked before receipts are issued.

(ii) Large consignments will be unpacked and goods will be moved by forklift to storage areas.

d) **Storage**

(i) Corrosives/inflammables are kept in a store which is located separate from the main store.

(ii) Goods in bulk, e.g. cotton wool, gauze, stationery, dettol, furniture, etc. are held in the bulk store.

(iii) Drugs will be stored in the cool storage area.

(iv) Instruments are kept in the surgical store.

(v) Other items requiring cool storage, e.g. rubber goods, laboratory chemicals, X-ray films, etc. are held in an air-conditioned store.

(vi) Items requiring refrigeration, e.g. vaccines, will be kept in refrigerators/freezers.

(vii) Control drugs (DDA) will be kept in tight security.

(viii) Items will be kept on angle-iron shelves.

e) **Inventory control**

Supplies management for inventory control system will be carried out to record intake of fresh stock and withdrawal for issue. Periodic inventory checks will be conducted.

f) **Distribution of supplies**

Departments indenting items from the store will submit their requirements through the computer terminal. The store will pack and distribute supplies by porters.

g) **Unusable items**

(i) Departments will inform the store of unusable items to be removed. These will be inspected by store personnel who will then instruct the user department to send them to the store.

(ii) These items will be kept in the store until clearance is given to dispose of the condemned items.

5.4.6.4 PLANNING CONCEPT

a) The receiving area of the store should be at one end of the access road, and away from the issuing area. There should be parking bays for lorries (up to 5 tons) and vans.

b) The unloading bay should be raised so as to permit direct unloading of lorries. There should also be a ramp for moving goods unloaded from vans and pick-ups at road level.

c) The hard standing around the unloading bay should be adequate for lorries and other vehicles to reverse and park or back up for unloading goods.

d) Adjoining the unloading area is the sorting and preliminary unpacking area.

e) From here a gradual ramp is necessary for the forklift to move down to the storage areas.

f) There should be a wide central corridor with the storage areas on either side. A wide central corridor is recommended, dividing the main storage areas; it will permit free and easy movement of materials and forklifts.

g) The store should have a portal frame roof and be at least 30 feet high to allow for stacking of goods and proper ventilation. The side walls of the store should be at least 20 feet high.

h) In the bulk storage area, angled iron shelves will be set irregular rows with adequate space for movement of a forklift.

i) For effective supervision, the administrative section including the pharmacist's office should be located on a mezzanine floor. This permits the overseeing of stock movement in the store, as well as the unloading and issuing activities.

j) The packing and issue area should be at the point which is most accessible to staff from the various departments.

k) The inflammable and corrosive store should be located off the access road at a safe distance from the main store.

1) The store for unusable items should be located such that the receiving area is accessible to the various departments and adjoining the access road. In the store, the storage areas will be in the form of simple bays.

5.4.6.5 LOCATIONAL FACTORS

a) The store should be located away from inpatient and other service areas for reasons of security and the movement of heavy vehicles to and from the store.

b) It should have an access road away from the main entrance road. This access road may be the same one as for the kitchen and mortuary if the building layout permits.

c) It should be easily accessible to staff coming from various departments for supplies. A broad covered walkway is required.

d) A loading and unloading bay should be provided.

5.4.6.6 RELATIONSHIP WITH OTHER DEPARTMENTS

a) Pharmaceuticals, antiseptics, disinfectants are issued to inpatient pharmacy, which in turn, will supply the end-user departments.

b) Medical and surgical equipment and commercially sterilised and non-sterilised items will be issued directly to the end-user department.

5.4.6.7 ORGANISATION

a) The hospital medical store, being a component of the pharmaceutical and supplies service, comes under the overall management of the hospital pharmacist.

b) The store itself is run by a pharmacist, assisted· by storekeepers, clerical staff, general workers and drivers.

5.4.6.8 FUNCTION OF SPACES

a) Entrance

(i) Receiving /unloading area

This is a raised area for direct unloading of goods from lorries. Porch will be available to provide shelter for vehicles backed-up and staff involved in unloading. A ramp is required on one side leading down to the surrounding hard standing, where vans and pickups will unload their goods.

(ii) Forklift park

When not in use or after office hours, the forklifts will be kept here and battery charged. This should be near the unloading area.

(iii) Sorting/preliminary unpacking

Goods with be sorted and checked against invoices. Large consignments will be unpacked for shifting by

forklift. A gradual ramp leading down to the main storage areas is essential for the forklift.

(iv) Disposal room

b) Storage Area

(i) Bulk store

Bulky items and those held in bulk will be kept here, e.g. containers, furniture, cotton, gauze, stationery, linen, detergents, crockery, etc.

(ii) Empties/recycling store

(iii) Surgical store

Dressings, durable rubber goods, disposables, surgical instruments, non-delicate medical equipments, glassware, etc. will be kept in the store.

(iv) Cold store and refrigerator

Laboratory chemicals, certain rubber goods and delicate equipment will be kept here. Refrigerators and freezers are required to keep stocks of drugs, vaccines, etc.

(v) Drug store

For the storage of drugs and pharmaceutical ingredients which do not require cool storage.

(vi) Dangerous drugs store

Dangerous drugs need to be stored with tight security measures.

(vii) Stationery store

This provides storage for stationery for hospital consumption.

(viii) Condemned store

c) Packing/Issue

(i) Packing area

Indents from various departments will be packed and made up at this section

Work-tops and table space required.

(ii) Issue area

Supplies to the various departments will be issued here. Shelves and issue counter will be necessary.

(iii) Waiting area/trolley park

Staff from user departments/porters will wait here with their trolleys to collect supplies.

(iv) Cleaner's room

d) Staff Area

(i) Pharmacist's office-cum-meeting room

1. For the pharmacist in-charge to perform administrative work.
2. Reception counter and sub wait for 10 persons to be provided.

(ii) Supervisor's room (chief storekeeper)

(iii) General office

Office space for 6 personnel with computer terminals.

(iv) Records room

Files and records will be kept here.

(v) Waiting area for general office

A waiting space for 8 persons will be sufficient.

(vi) Staff rest room

For the medical store staff to rest and have their coffee/lunch breaks.

(vii) Staff toilets

A male and a female staff toilet should be provided on the ground floor.

(viii) Seminar room

To accommodate 12 persons.

(ix) Staff change

For male and female staff.

(x) Driver's room

(xi) Cleaner's room

(xii) Disposal room

e) **Inflammable/ Corrosive Store**

(i) Unloading area

A raised area is necessary for direct unloading of lorries. A ramp on one side is required to permit forklift movement. A porch to shelter vehicles which are backed-up to unload goods and staff involved in unloading them are needed.

(ii) Inflammable storage section

Inflammables such as ethanol, methanol, acetone, etc. will be kept here.

(iii) Corrosive storage section

Corrosives kept here include phenols, hypochlorites, acids and alkalis.

5.4 MEDICAL SUPPORT SERVICES

5.4.7 LOGISTIC (PORTERAGE AND AMBULANCE) SERVICES

5.4.8.1 PORTERAGE SERVICES

a) The central porterage service will be responsible for the transport of patients and delivery of supplies i.e. delivery of meals and trolleys, medical and non-medical supplies, specialised supplies, etc.

b) The services will be managed through a routine or scheduled arrangement. However, for urgent transport of patients or delivery of supplies, ward attendants may be deployed.

c) Components

(i) Office space and rest room for the porters with toilet facilities and lockers.

(ii) Holding area for trolleys, carts, etc.

5.4.8.2 Transport Services

a) Internal Transport System

(i) Porterage system will be used to transport patients' record, stationery, written messages, request forms for laboratory test and x-ray examination, laboratory specimens, small x-ray films, some of the pharmaceutical supplies, etc.

(ii) Supplies will be delivered to the stations at the following service areas :

1. Admission Room
2. Emergency Department.

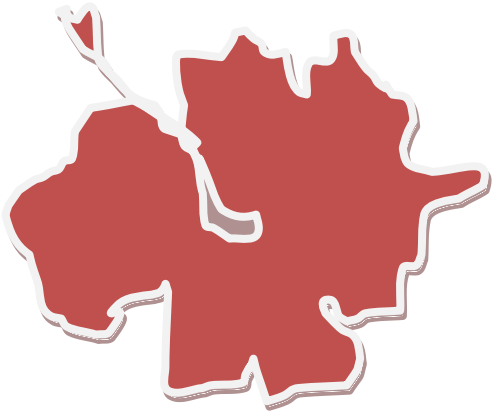
3. Outpatients Clinic
4. Records Department
5. Imaging Department
6. Pathology / Blood Bank
7. Pharmacy
8. Medical Store
9. All Wards
10. Labour and Delivery Suite
11. Operating Theatre.
12. CSSD
13. Kitchen
14. CME Unit
15. Administrative Office.
16. Engineering Department

b) External Transport System

(i) Vehicles will be used for external transportation for patients and staff. Number and types of vehicles to be supplied will confirm to the norms of Ministry of health. However, the types will also need to be adjusted to meet the local requirements of the road conditions / land / water transportation.

(ii) A standby ambulance will be parked at the garage off the Emergency entrance. The rest of the ambulances and other vehicles will be parked in the garage at a designated zone. A room for the drivers should be provided other than the room at the Accident and Emergency Department.

5.5 The Non Medical Support Services



5.5 THE NON MEDICAL SUPPORT SERVICES

5.5.1 CATERING DEPARTMENT

5.5.1.1 FUNCTIONAL DESCRIPTION

a) To provide fresh, individually served meals by a system of central plating and washing to all inpatients, dialysis patients, daycare and medical officers on-call and *mothers accompanying children* (MAC).

b) To provide day care/day surgery unit and the emergency department with dry rations for beverages.

c) To provide night rations for staff on night duty.

d) To provide separate menus for Royal, VVIP, private and other patients.

e) To receive pre-cleaned and pre-cut food supplies from suppliers to avoid wastage.

f) To provide diet therapy counselling and preparation of special feeding/diet programmes.

g) To train catering personnel.

5.5.1.2 OPERATIONAL PRINCIPLES

a) The concept of "dry kitchen" is expected in this department to optimise drainage.

b) Different food, e.g. fish, meat, vegetables and others will have separate storage facilities. Uncooked and cooked food must not be mixed in the same area.

c) Incoming goods and waste disposal must be separated.

d) Kitchen waste will be held in closed containers in a clean area and disposed of at least twice daily by private contractors as per contract from the disposal area designated in the department.

e) Staff changing and hand washing facilities in the department to ensure that the staffs maintain the highest standard of personal hygiene.

f) The department is to be designed and operated on a fully centralised food service system (centralised plating and dishwashing).

5.5.1.3 WORKLOAD

a) Allowing for bed occupancy of 80% (of 650-800 beds) and a small proportion of patients not receiving meals- e.g. Post Operative, ICU, CICU patients including small children on milk feeds; it is expected that 520-640 patients will be served by the department.

b) The private/VVIP and Royal patients will have 6 meals /day while the second and third class will have 4 meals /day (refer table 5.5.1:1). for the type of meals provided).

c) Some beverages may need to be prepared in the respective ward/department pantries on request.

d) Meals Provided:

Type of Meals	VVIP/Royal/Private	All Other Wards
1. Breakfast	provided	provided
2. Morning Tea	provided	-
3. Lunch	provided	provided
4. Afternoon Tea	provided	provided
5. Dinner	provided	provided
6. Supper	provided	-

Table 5.5.1: 1 Meal Schedule

5.5.1.4 LOCATIONAL FACTORS

a) Priorities

(i) The catering department will be located on the ground floor within the support zone of the overall hospital. It must be located so that it is accessible to, but not near to the inpatients areas to avoid or minimise noise and smell.

(ii) The department should have easy access to the wards through covered and levelled passageways both vertically and horizontally, manually or by motorised transport.

(iii) Access road to the department's service area is required for receiving supplies (food, gas) and for rubbish collection daily. It should not be accessible through contaminated service area.

(iv) The department should be zoned away from the mortuary.

b) Departmental Relationship

(i) Ward pantries

A limited amount of crockery and cutlery should be kept in the ward pantry. Also, a fridge, hot water flasks, microwave oven, toaster and disposable items like serviettes and plastic cups are to be provided in the ward pantry.

(ii) On-call unit

Pantry facilities are also to be provided and beverage items topped-up regularly.

5.5.1.5 PLANNING AND DESIGN CONCEPTS

a) The design of the department will be conducive to the achievement of a high standard of environmental hygiene.

b) The department will be designed with the view of privatisation of the service. Hence, separate mechanical and electrical supports are to be provided.

c) The department will be built as a separate and independent physical facility but linked to related departments of the hospital.

d) Security should be addressed in the design to prevent infection, theft and contamination of any kind to the product of this department.

e) There should be an ante-room before access to the toilets and change rooms to avoid unwanted odour and to ensure privacy for the user.

f) The receiving area of raw and bulk supplies should be located away from the servery area. The receiving and unloading area must be wide enough for easy movements of

vehicles bringing in supplies and taking away disposed items although at different times.

g) The checking and weighing area of the bulk supplies should adjoin the receiving area. Gross cutting and cleaning areas are to be provided.

h) The bulk store and day store should be close to receiving area.

i) Ward issue area should be adjacent to the storage area and supervisor's office. Ward issue area is to be accessible in between meal times without entering the department (kitchen).

j) The preparation area should adjoin storage areas and should be divided into wet and dry preparation area. Prepared raw materials e.g. meat, fish, vegetable, etc. will be kept in the freezer and chillers prior to cooking.

k) The cooking area should adjoin the preparation area in a linear arrangement.

l) The loading area of food trolleys should be at the servery area.

m) The wash area for pots and pans should be located near the cooking area.

n) The wash area for trolleys, trays and crockery can be centralised for easy administration.

o) The external service area especially the loading and unloading area must have adequate space for several vehicles to deliver at the same time, and the road pattern

should have space for adequate manoeuvring and turning of large eight-wheeled vehicles, e.g. to reach the LPG store.

p) The need to ensure separation of many classes of products within the department, such as:

1. incoming from outgoing (disposal) items;
2. meat from fish;
3. cooked from uncooked;
4. special diet preparation and cooking from general preparation and general cooking; and
5. wet from dry areas within the preparation area.

q) The need for extensive trolley parking is critical to avoid overcrowding and ensure easy traffic flow. The number of trolleys should be able to serve all wards and other departments/units where meals are needed. Trolley parking spaces will be provided before and beyond the trolley wash area and at the servery area.

r) The servery should allow for a minimum of 3 (or more) conveyor belt systems with both sides flanked by the food bain maries. Each belt will allow for 10 ball maries (x 3).

s) It is an absolute requirement to practise hygienic food handling in preparing food.

t) Separate hand washing facilities must be made available in preparation and cooking areas. The staff change arrangements should permit staff to change out if garments are heavily soiled in between working hours as well as change at the start of a shift.

u) To provide or proposed advanced technology method on food preparation or cooking processes with less human handling to prevent food contamination.

v) Facilities for training of required staff schedule are provided as per guidelines, i.e. 1 seminar room per department for 15-20 personnel per session.

5.5.1.6 WORKFLOW AND FUNCTION OF SPACES

a) WORKFLOW

(i) The raw supplies will be checked and weighed when received. After checking, raw supplies will be stored in the freezer and chillers, prior to preparation.

(ii) Gross cutting and cleaning may be done prior to storage or prior to preparation.

(iii) After the food is prepared, it will be plated using conveyor system before it was be transferred into suitable food trolleys.

(iv) The food will be served hot on heated plates. Cold dishes (dessert, fruits and drinks) will be served from the department as well.

(v) Staff at the wards will serve the meals once the food trolley is brought in. At the completion of the meals, all used trays, cutlery and food remnants should be left on the food trays and the trays returned to the trolley by the ward staff.

(vi) The food trolleys will be brought back to the catering department for washing and storage.

b) FUNCTION OF SPACES

(i) Receiving and storage area

1. Receiving/checking/sorting/gross cutting and washing

   Supplies are unloaded here from lorries, vans and pickups. A covered porch with an adequate gradient ramp on one side is required. The rations are sorted, checked and weighed here. Provisions should be made for a counter, low benches for sorting, chopping board, washing facilities, and built in plinth for weighing machine. All work surfaces are to be of heavy-duty durable material (e.g. stainless steel).

2. Bulk store

   Dry rations, canned food, etc. are held here, sufficient to cater for a minimum of 4 weeks. A raised timber/wooden platform are necessary for storing rice and sugar in bags. This is necessary to avoid moisture. Heavy duty and maintenance-free shelves must be provided for storing other goods. The room should be adequately ventilated with rodent and pest proof facilities.

3. Dry item store

   Dry items for individual consumption will also be stored here such as sachets of sugar, salt, pepper, etc.

4. Day store

   For keeping fresh foods and dry rations to be used for the current day and should be adjacent to the servery area.

The room should be adequately ventilated with rodent and pest proof facilities.

5. Interim store

For storage of ward supplies.

6. Bread and egg store

7. Cold room and chillers

Cold rooms and chillers should be provided for storing fresh food/raw materials, meat and fish. Two areas of cold rooms and chillers are to be provided. One is near the receiving area for unprepared raw materials and another area is for raw materials already prepared and ready to be cooked.

(ii) Preparation/cooking/plating area

Food is prepared here. The areas required are:-

1. Dry preparation
   - 1.1 for bread cutting and dessert making
   - 1.2 for making pastry
   - 1.3 for making drinks and cutting fruits.

2. Wet preparation
   - 2.1 Deep and wide troughs are required at wet area.
   - 2.2 for meat
   - 2.3 for vegetable
   - 2.4 for rice/porridge.

3. Special diet preparation

4 Cooking area

The cooking area should adjoin the preparation area. Rice will be cooked in rice cookers. Other dishes will be cooked using closed system ovens (convotherm), Deep pan for deep frying, gas range and microwave oven.

Steam supply outlets are to be provided for the required equipment.

5. Servery

Conveyors for serving individually plated food are required. To prevent spillage during transport, plate, bowls and mugs must be provided with individual covers.

An area should be provided for plates/crockery and dispenser.

6. Trolley area

An area for food trolleys is to be provided. Food trolleys will be distributed by tug and trolley system or motorised hand-pushed trolley using lifts. The system will depend on the location of the proposed department vis-à-vis the rest of the hospital and existing facilities.

(iii) Receiving/trolley holds area

1. Food trolley park

An adequate area should be provided for trolleys to be packed within the department, away from cooking and food preparation areas.

2. Trolley wash area

There should be areas provided for washing of utensils, pots and pans.

3. Central washing for trays and crockery

A central washing machine for patients' trays and crockery should be provided. A manual washing area and facilities are to be provided in case of power failure or equipment breakdown.

(iv) Stores and support areas

1. Crockery store

For storing clean, dry food containers, cooking utensils, crockery and extra equipment. There should be at least 4 sets of crockery to each patient bed. Each patient will have a jug/container with glass to keep cold water and a flask to store hot water all on a tray.

No of Sets	Function / Location
1	In use in ward
2.	in the process of plating
3.	Storage
4.	in the washing machine

Table 5.5.1: 2 . Crockery Sets

2. Equipment store

For storage of mobile equipment.

3. General store

For storing serviettes, plastic bags to line trash bins, plastic containers, foil, disposable trays for highly infectious patients, etc. The room

should be adequately ventilated with rodent and pest proofing.

4. Detergent store

   To store detergents and other washing materials

5. Cleaner's room

   To be equipped as other cleaners' room except it should be equipped with an apparatus which is able to remove dirt and grease from the department/kitchen floor and walls.

6. Clean linen store

   For storage of aprons and caps

7. Soiled linen store
8. Disposal room
9. Gas storage

(v) Staff Areas

1. Offices

   1.1 Head of the catering department will have his or her own office.

   1.2 A common open office space based on an open office concept for catering officer, supervisor and clerical staff will be required. Space for office equipment such as computers, printers and photostat machine, etc. should be provided.

2. Staff rest room

   A separate staff room is to be provided for male and female staff.

There will be 4-5 personnel at any one time who will have lunch and tea breaks. A kitchenette is to be provided within the rest room with facilities for warming-up food and making drinks.

3 Staff toilet

Separate male and female toilets are to provide with ante-room. Separate toilets are to be provided for administration staff and visitors to the department.

4. Central catering staff change room

Male and female changing rooms are to be provided separately. Individual lockers for uniform, personal items, boots, etc. should also be provided alongside the changing cubicle and toilets. Toilets should provide adequate numbers of squat and seated WCs with shower facilities. Facilities for storage of aprons and caps should be provided near the changing room.

5. Prayer rooms

Separate male and female prayer room should be provided adjacent to the staff rest area. It should be provided with en suite ablution, shoe racks, clothes hooks or clothes railings with some shelving.

5.5.1.7 MANAGEMENT & HUMAN RESOURCE

a) The department will operate on 3 shifts, seven days a week. Operations will begin at 5.00 a.m. with preparation of beverages.

b) The department will be under the charge of a dietician.

c) The norms provided for is 1 catering officer to 200 beds. This officer will oversee the preparation, cooking and distribution functions.

d) Staff will be required to distribute and collect food trolleys

5.5.1.8 APPLICATION OF WHOLE HOSPITAL POLICIES

a) Whole hospital policies

Whole hospital policies will apply subject to existing condition.

b) Housekeeping

External and general cleaning will be undertaken by the privatised contractors.

c) Supplies

Daily supplies of wet and dry food items will be sent directly to the catering department.

General supplies of other materials will be provided to the department stores from the hospital stores on requisition basis.

d) Disposal

Disposals will be by conducted by privatised contractor from the disposal area of the department.

5.5.1.9 ENGINEERING & ENVIRONMENTAL SERVICE

REQUIREMENTS

a) Air Conditioning and Ventilation

(i) Chilled water from central plant if cost effective other wise split unit.
(ii) Air conditioning for comfort will be provided for management area and office.
(iii) Use chilled water fan coil units.
(iv) 24 degree centigrade DB adjustable, 55 % RH.
(v) To provide Noise less Exhaust system.
(vi) Exhaust ventilation to cleaners, stores, toilets, disposal, staff change, utility etc.
(vii) For the cooking area forced ventilation shall be provided such as dedicated fumed chamber or others.
(viii) Air Condition to be provided at administration/management areas

b) Gases

(i) Liquefied gases shall come from energy plant or if not cost effective it shall be satellite strategically located within the department as per Building by Law, accessible by vehicle from the external wall.
(ii) High pressure gas outlets to steam cooking equipment are required.

c) Electrical Supply

(i) Essential and non essential incoming submains is required. Essential requirements are necessary for fridges and freezers, computers, cooking, serving and washing functions.
(ii) distribution board with essential and non essential sections.
(iii) Adequate power sockets strategically located (refer to

MOH guidelines)

d) Lighting

(i) To MOH standard illumination levels.

(ii) Self contained exits and emergency lights to high level as per Malaysian Standard/ Australian Standards.

e) Communication

(i) Telephone point to all occupied spaces. B Line in Dietitian in Charge's Office. Others C-line.

(ii) Total Hospital Information System

Computerisation network to be in office area to be link with overall hospital especially wards. Minimum of 4 workstation and printers are required for this department.

The locations are Dietician 1,

Catering Officer 1,

Kitchen Supervisor 1,

and general office 1.

f) Water Supply System

(i) Hot water for the kitchen will be produced and reticulated from the hospital's central calorifier plant.

(ii) Hot water supply of 60oC will be provided for:

(iii) All shower points staff wash basins and pantry.

(iv) All equipment requiring such services.

(v) Cold water will be provided for all basins, WC's and all equipment and facilities requiring such services.

g) Drainage Services

(i) Drainage services will be provided for all basins, sinks, WC's and equipment and facilities requiring such facilities.

(ii) Drainage services will be designed to suit the particular application such waste traps etc. and for oil, fats etc resistant where effluent is involved with ease of access and minimal disruptions in case of blockages being an essential feature.

(iii) Drainage services for the kitchen and cooking equipment will have to be provided to suit the particular equipment and processes.

(iv) Open drainage for easy maintenance and routine cleaning is required for all outlets within the building prior to external first manhole.

(v) Heavy Duty 1/2 round drain for easy cleaning is required.

(vi) The use of filter mesh for all cooking hoods is preferable.

h) Fire Fighting and Protection Services

(i) These will be provided in accordance with the present Building by Laws of Malaysia, pending the final approval of the local Fire Fighting Authorities.

(ii) Among the facilities proposed to be provided for this department are:-

(iii) portable fire extingushers mounted in strategic locations.

(iv) automatic sprinkler systems.

(v) break glass alarm points.

(vi) alarm annunciators/alarm bells.

(vii) hose reel system.

(viii) self-contained signal point indicators.

(ix) The department's fire protection facilities will need to be integrated in the overall buildings fire fighting system infrastructure.

(x) The fire detection system will be connected to the building's central fire alarm panel and building management system for central handling.

i) Other Miscellaneous Services

(i) Staff punch clock will be provided in the general office of the department.

(ii) Battery Clocks to all other staff-occupied spaces.

(iii) Specific engineering requirements will be apply to the washing machine disinfectors, autoclaves and other mechanical and electrical equipment.

j) Building Automation System

(i) The Catering Department to be fully intergrated with BAS i.e. with monitoring and remote control for all parameters of the air conditioning system, fire protection system, electrical supply system, communication system, plumbing including hot and cold water system where applicable.

5.5.1.10 SPACE PROVISIONS

As per Suggested Schedule of Accommodation in the Appendices

5.5 NON MEDICALSUPPORT SERVICES

5.5.2 LINEN HOLDING

5.5.2.1 FUNCTIONAL DESCRIPTION

a) This service will be run by a private contractor and appointed by IIUM. Designated zones should be provided to be leased out to the contractor to carry out this service.

b) The contractor will carry out the laundry outside the hospital vicinity.

c) The services will be carried out as per contract schedule in terms of:
   (i) Distribution of clean linen to user departments.
   (ii) Collection of soiled linen from user departments.
   (iii) Checking the linen before distributing to ensure no wear and tear, etc.
   (iv) Stocking of linen at user departments.

d) The type of linen to be provided will be as per contract.

5.5.2.2 SPACE REQUIREMENT

The contractor is to propose the space requirements for the main linen holding area based on the MOH guidelines to support and facilitate the efficient and reliable supply of linen.

5.5.2.3 LOCATION FACTORS

a) The location of the main linen holding area to support the private laundry services should be located away from the main traffic lines and public area.

b) It is proposed that this unit to be together with the rest of the privatised services areas.

c) It should be accessible to the service road.

5.5.2.4 COMPONENTS

Components of the unit will include the following:

a) Reception and sorting area for soiled linen.

b) Dirty holding area.

c) Clean holding area

d) Soiled / fouled linen area - special treatment needed for the linen.

e) Facilities for washing linen carts

f) Staff changes with toilet.

g) Staff office.

h) Staff rest room.

i) Musolla

j) Stores

5.5 THE NON MEDICAL SUPPORT SERVICES

5.5.3 BIO MEDICAL & ENGINEERING SERVICES

5.5.3.1 FUNCTIONAL DESCRIPTION

a) The operational and maintenance of the hospital assets shall be managed by IIUM Maintenance and Engineering Services Department

b) Engineering services in a hospital is highly capital intensive with equally high recurring costs of energy and maintenance. The engineering services design and implementation should, therefore, take the following factors into consideration;

(i) Ease of operation
(ii) Energy efficiency
(iii) Durability
(iv) Maintainability
(v) Flexibility
(vi) Responsive to new technology

c) Engineering Services includes the following the provision of facilities to provide the support to the hospital;

(i) Engineering Department for administration
(ii) Maintenance and wokshop area for services
(iii) Central Plant as energy/supply to support the hospital
(iv) Condemned stores
(v) Service spaces, etc

d) The engineering ser vices design and

e) Building automation system will be managed through a control room.

5.5.3.2 OPERATIONAL POLICIES

5.5.3.3 WORKLOAD

5.5.3.4 LOCATIONAL FACTORS

a) The engineering department should be located adjacent and linked to the plant room or integrated within the plant room.

b) Security and safety to the location should be considered.

c) Priority should be given to patient care in locating the required services.

d) Accessibility for the workroom and maintenance is vital for logistics

e) Access to services in clinical areas should not criss-cross with the clean areas.

f) Locations where equipments and parts that require frequent and schedule services should be easily accessible without disrupting the daily routine or passing through clean area

5.5.3.5 PLANNING AND DESIGN CONCEPTS

a) The engineering department should be located adjacent and linked to the plant room or integrated within the plant room

b) The infrastructure provided should be complete and capable to serve the Departmental requirements

c) Economic and practical factors are considered in determining the plant and/or reticulation capacities and whether they should be oversized for the next phase development

d) Plat room space, riser ducts, trenches, trays, pipe ducts, etc. are allowed from the ease of future addition and expansion.

e) No interruption should occur to the supply of engineering services to the hospital.

Should any interruption be necessary, this should be kept to a minimum and hospital management advised in advance

5.5.3.6 WORKFLOW AND FUNCTION OF SPACES

a) WORKFLOW

b) FUNCTION OF SPACES

(i) **Bio Medical Maintenance**

The operation and maintenance of biomedical equipment, the plants and other engineering services· shall be operated and maintained by the hospital. Workshops consisting of every components of the services is needed with a appropriate spaces necessary and required for the running, repair and management of the services on sites and as temporary holding area for the equipment or other engineering items prior for despatch for repairs or overhauling. Provision for space for operators such as boiler man, charge-man etc. shall be provided.

(ii) Engineering Department (administrative)

1. Entrance /Reception Area

1.1 Reception & waiting area
1.2 Visitor's Toilet
1.3 Building products exhibition area

2. Office Area

2.1 Drawing Office
2.2 General Office (including clerical spaces)
2.3 Engineers and Technical Staff Areas
2.4 Staff Toilets (Male & female)
2.5 Staff Rest and pantry
2.6 Meeting Room (2 nos)
2.7 Resource Centre/Library

2.8 General Store
2.9 Equipment Stores
2.10 Prayer Rooms (Male & female)
2.11 Cleaners
2.12 Disposal Hold

3. Ancillary Rooms (workshops)

3.1 Equipment Holding
3.2 Temporary holding area for equipment to be repaired and other engineering items
3.3 Workshops (Biomedical, other (3 nos) with storage and technician space)
3.4 General Store
3.5 Equipment store (electrical)
3.6 Prayer Rooms (male & female)
3.7 Staff Change (male & female)
3.8 Cleaners Room
3.9 Disposal Hold

4.Building Automation Area (Security)

4.1 Control Room with control panel and monitoring panel for all building systems (fire, lift, air-con, energy,etc)
4.2 Chief Engineer's Office
4.3 Staff Toilet (male & female)
4.5 Staff Rest and pantry
4.6 Prayer room
4.7 General Store

5. Central Plant

6. Sub Office (where relevant) in main

hospital, service areas

5.5.3.7 MANAGEMENT & HUMAN RESOURCE

The operation and maintenance of biomedical equipment, the plant and other engineering services will be carried out by IIUM in-house engineers and technical staff.

5.5.3.8 APPLICATION OF WHOLE HOSPITAL POLICIES

5.5.3.9 ENGINEERING & SERVICE REQUIREMENTS

Engineering Services System

Civil & structure	**Mechanical**
Earthwork	Fire protection system
Road	Cold water plumbing system
Drainage	Air-conditioning system
Sewerage	Mechanical ventilation
Water supply	Sanitary plumbing system
Structure	LPG installation
Electrical	Hot water system
Electrical system	Mortuary refrigerators
Nurse call system	Sterilisers & related equipment
Digital call system	Medical gases pipeline
Security service	Lift installation
Voice comm	Kitchen equipment
Lighting system	BAS
Public address	Cold/Hot room equipment
Firemen Intercom	Dental unit & Related equipment
AV system	Hydrotheraphy system

Server	Asset management system
Internet	Space management system
Teleconference	Facilities management system

Other where appropriate

(ii) Building Automation System

As part of the hospital information system, building automation system shall be established in this hospital. Application like facility management system should be developed to facilitate efficient, effective running of hospital facilities. The control room should be located away from the public area

5.5.3.9 SPACE PROVISIONS

5.5 NON MEDICAL SUPPORT SERVICES

5.5.4 CLEANING AND HOUSEKEEPING SERVICES

5.5.4.1 FUNCTIONAL DESCRIPTION

a. The cleaning services of the whole hospital will be privatised.

b. The cleaning schedule and use of chemical and reagents for various cleaning method shall be in accordance to the standards contract.

5.5.4.2 SPACE REQUIREMENTS

a) Facilities required for cleansing services will include:

(i) Cleaners room to be provided all users departments.

(ii) Washing area

(iii) Storage for cleaning and housekeeping equipment, detergents, disposable, etc.

b) Staff facilities

(i) Staff change

(ii) Staff rest

(iii) Staff Toilet

5.5 NON MEDICAL SUPPORT SERVICES

5.5.5 WASTE MANAGEMENT

5.5.5.1 FUNCTIONAL DESCRIPTION

a) The clinical and solid waste services will be operated by a private Company, appointed by IIUM

b) This scope and methodology of waste disposal shall comply with the authorities' requirements. (Department of Environment, local council, Atomic Energy, etc). This will include:

(i) Collection of biohazards waste materials from user departments (sharp containers bags).

(ii) Issue of garbage bins to user departments.

(iii) Security measures to the area to ensure it is not accessible to un-authorise person.

5.5.5.2 LOCATION FACTOR

The main waste holding area shall be located within the non-medical support zone. It shall be accessible by the support services road. Disposal area/collection points at hospitals will be provided at the user departments.

5.5.5.3 SPACE REQUIREMENT

The main waste holding area shall be provided and shall adhere to local council guidelines, Department of Environment and other

relevant authorities' requirement.

5.5 NON MEDICAL SUPPORT SERVICES

5.5.6 SECURITY SERVICES

5.5.6.1 FUNCTIONAL DESCRIPTION

a) The security services for the hospital will depend on the layout of the building/structure and entrances.

b) 24 hours security service is required. The security personnel will be posted to the designated areas in the hospital which covers hospital ground, buildings, staff and patient's areas. They are also responsible for visitors control and to make regular rounds.

5.5.6.2 SECURITY SYSTEM

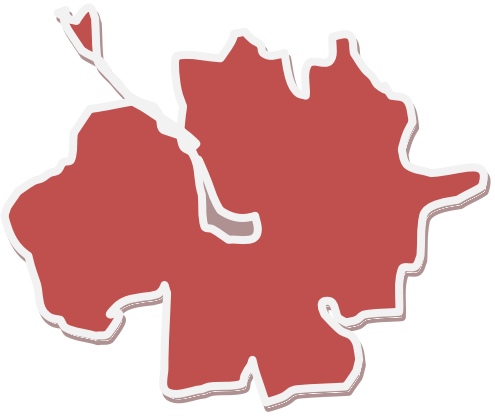
Mechanical and electronic security system will be established for the Hospital as part of the building automation system. Modern and up-to-date technology shall be used to ensure efficient and effective security system and to be linked to the control room.

5.5.6.3 SPACE REQU1REMENT

Space requirements for the security personnel will include:-

a) Security base at certain designated areas e.g. lobby, car parks, etc.
b) Security personnel office.
c) Staff rest room.
d) Staff change(male & female)
e) Staff toilets (male & female)
f) Musolla.

5.6 Training, Research & Educational Facilities



5.6 TRAINING, RESEARCH, & EDUCATIONAL FACILITIES

5.6.1 CONTINUOUS MEDICAL EDUCATION TRAINING CENTRE

5.6.1.1 FUNCTIONAL DESCRIPTION

a) One of role of IIUM Hospital is to provide facilities for Continuous Medical Education (CME) not only for undergraduate but for post graduate training and continuing medical education to the staff and health professionals from IIUM , other government agencies/bodies (medical officers, paramedics, technical and administration supportive staff), private sectors, non-government organisations, locally and internationally.

b) The Centre will provide facilities for seminars, conferences, meetings, workshops, orientation and others.

c) In-house and Invited speakers, trainers, facilitators may be called in to conduct training and give lectures.

d) The library should accommodate up to date system and serve as support to CME.

e) Telemedicine and teleconferencing will also be implemented inn the centre.

f) The training facilities should follow guidelines of the Ministry of Health Malaysia and relevant authorities;

g) The Centre will have its own management office to facilitate the event, scheduling and use of the facilities effectively

h) The Centre accommodates the following functions:

(i) Conference Unit

(ii) Hospital Library

(iii) Image Production Unit

(iv) Management Office

5.6.1.2 OPERATIONAL POLICIES

a) The Conference Unit will be used intermittently

b) The Hospital Library will be open during office hours and any other time as management deem fit for use

c) Image Production Unit will operate during office hours and any other time as management deem fit for use

5.6.1.3 WORKLOAD

a) Conference:

300 people x 1 auditorium

50 person x 2 seminar rooms

30 people x 3

b) Hospital Library Books/Journals/

100 Person

c) Image Production Unit 5 persons

5.6.1.4 LOCATIONAL FACTORS

a) The Centre should be located in the Training Zone near Academic Office, Clinical Examination Centre and Health Education Unit.

b) It should have easy access for the public and away from patient entrances/emergency or service ways

c) Separate access for goods /services from hospital service streets

d) Accessible from main hospital street

e) Allow for expansion

5.6.1.5 PLANNING & DESIGN CONCEPTS

a) The planning and design of the facilities should reflect conducive learning environment away from hustle and bustle of the hospital proper.

b) The restorative concept connected to nature should be provided in the public spaces.

c) Overcrowding of area to be avoided.

d) The facilities provided should be accessible to all (inclusive design/barrier free).

e) The planning should ease maintenance, efficient use and control of energy, presentation style or mode

f) The design should be contemporary and appropriate to its function, flexible, safe and pleasant settings;

g) As a transient space, these facilities should be autonomous in use i.e. controlled locally and oversee

5.6.1.6 WORKFLOW AND FUNCTION OF SPACES

a) WORKFLOW

(i) All entries except for services/loading will pass the main reception of the centre before proceeding to the respective unit;

1. Conference/Seminar

1.1 Attendees of the conference/seminar will register at the reception desk of the conference unit;

1.2 Guest speakers/lecturers will be lead to guest holding lounge prior the event.

1.3 Service entry should enter through service entrance of the Centre

2. Library

2.1 All users of the library will be required to leave their personal belongings at the lockable personal lockers prior entry through screening are pre-counter area of the library. Users will exit the same way as they enter.

2.2 Library staff will enter the main library entrance prior entering their work space.

(ii) Image Production Unit

(iii) Staff will enter the unit through main entrance.

b) FUNCTION OF SPACES

(i) Conference Unit

1. Entrance and reception

1.1 Foyer and exhibition area

1.2 Reception and waiting area

1.3 Lounge for speakers and guest (and Ensuite).

1.4 Pre Function Area

1.5 Prayer Rooms (Male & Female) with ablution

1.6 Public toilets (male and female, disable, nappy change/ breast feeding)

(ii) Auditorium

1. Auditorium

An auditorium to accommodate 300 seats with all support facilities including the stage and teleconferencing facilities (which are also linked to all the OTs) is to be provided.

2. Control Room
3. Interpreter Room
4. Stores:
   - 4.1 AV store
   - 4.2 General store
   - 4.3 Equipment Room
5. Dressing room (Male & Female) Ensuite

(iii) Seminar room area

1. Seminar rooms (5)

   Each seminar room is to accommodate 50 persons (2 nos) and 30 persons (3 nos). Teleconferencing facilities will be provided in these seminar rooms.

2. Stores:
   - 2.1 AV store
   - 2.2 General store
   - 2.3 Furniture Store

(iv) Catering area

1. Servery area
2. Beverage area
3. Preparation/washing area
4. Service entrance
5. Staffs Toilet (Male & Female)
6. Disposal room
7. Cleaner's room

(v) Hospital Library

1. Reception and entrance/exit including borrowers' counter

2. Borrowers Locker Area

3. Display area for new journals and books.

4. Main Book Shelves Area

5. Archives and storage of books, journals, tapes, CDs

6. Computer terminals room/bays for internet , Medline access, network for electronic textbook

7. Video review room

8. Discussion rooms (3 nos) for 6-8 persons

9. Printing room /scanning

10. Workroom

11. where library book will be catalogued

12. Main reading area with carrels

13. Chief librarian room

14. General office

15. where 4-5 personnel work. Computerized.

16. Library Staff rest with pantry facilities

17. Library Staff toilets (male & female)

18. User toilets (male & female)

19. Equipment Room

(vl) Image production unit

1. Reception

2. General office for 3-4 personnel

3. Multimedia studio

    3.1 For screening and testing multimedia

4. Sound studio

    4.1 For testing and auditing

5. Stores:

    5.1 Slide store

    5.2 Equipment store

6. Workstation for graphic works

(vii) **Management Office Unit**

1. Main Centre Reception (outside the office)
2. Supervisor's office
3. General office
4. Staff rest with pantry
5. Staff toilets (Male & female)
6. Prayer rooms (male & female)
7. Cleaner's room
8. Stationery store

5.6.1.7 MANAGEMENT & HUMAN RESOURCE

a) Management staff

b) Library Staff

c) Image Production staff

5.6.1.8 APPLICATION OF THE WHOLE HOSPITAL POLICIES

a) Patient/Staff/Student/Visitors

All will enter through main entrance.

b) Logistic (Porterage and Transport)

As per whole hospital policies

Patient will be wheeled on trolley/wheelchair when session requires.

Access for food/goods loading will be

provided

c) Food/Catering

Food will be catered from within or outside hospital

Access for loading and area for preparation/serving is provided on location.

d) Linen

nil

e) Security Services

As per hospital security service

Each unit of the centre will not be able to access other units

f) Cleaning and Housekeeping Services

As per whole hospital policies

g) Sterile Supplies

nil

h) Pharmaceutical

nil

5.6.1.9 ENGINEERING AND ENVIRONMENTAL SERVICES

a) **Air-Conditioning and Ventilation**

(i) Air-conditioning can be provided for comfort for Conference Room, Administration offices, Supervisor and Tutorial rooms.

(ii) Use external located air-cooled packaged chiller serving fan coil unit. OA requirement for each fan coil unit should first be filtered and de-humidified to minimize `wet coil' conditions in the fan coil unit.

(iii) Minimum 5 AC/hr.

(iv) 12-hours system OA requirement to ASRAE standards or Malaysian equivalent with 24^{o}C and 55% RH conditions.

(v) Exhaust ventilation to Cleaner, Pantry, Equipment store and toilets.

(vI) Ceiling fans to other occupied spaces.

b) **Electricity Supply and Lighting**

(i) Non-essential incoming sub-mains and non-essential distribution board.

(ii) Adequate and appropriate power sockets strategically located (refer to guidelines)

(iii) To MOH and MS standard illumination levels.

(iv) Self-contained exit and emergency lights.

(v) Light dimming provision in Conference/Seminar and Tutorial rooms.

c) **Communications**

(i) Telephone points will be provided in accordance with IIUM's guidelines, mainly in Administrative offices.

(ii) 2 way Microphone per seat at auditorium with language channels (for interpreter/Q&A);

(iii) Data link and data line per desk in auditorium

(iv) Refer IT requirement as 5.7.5

(v) Teleconferencing & televideo capability and linked internally to Operating Rooms, selected clinical rooms eg.ERCP,

d) **Water Supply and Drainage**

(i) Domestic cold water will be provided for all sinks, basins, and toilets according to requirement.
(ii) Hot water will be provided by an individual electrical water heater for the Pantry.
(iii) Drainage services will be provided for all basins, sinks and toilets.

e) **Fire Fighting and Protection System**

(i) These will be provided in accordance with the present Building By-Laws of Malaysia, pending the final approval of the local Fire Fighting Authorities.
(ii) Among equipment provided for this Department are portable extinguishers, break glass points, alarm bells and self-contained signal point units.
(iii) There should be provision for the disable as stated in the MS guidelines

f) **Miscellaneous Services**

Clocks to be available at conference, seminar, meeting. discussion, general office and library reading area.

5.6.2.10 SPACE PROVISIONS

Refer SUGGESTED SCHEDULE OF ACCOMODATION in the APPENDIX.

5.6 TRAINING, RESEARCH, & EDUCATIONAL FACILITIES

5.6.2 HEALTH EDUCATION UNIT

5.6.2.1 FUNCTIONAL DESCRIPTION

a) This unit will be responsible for all the health education activities in the hospital.

b) The unit will organise health education activities such as talks, seminars, exhibitions, campaigns, etc at the hospital for public.

c) It will liaise with various departments in the hospital to organise the above for specific topics

d) The unit will also be responsible for the documentation and production of health education materials including photography and slide-making.

5.6.2.2 LOCATIONAL FACTORS

The unit should preferably be placed adjacent to the continuing education complex (CEC) off the main hospital street.

5.6.2.3 MANAGEMENT ORGANISATION & STAFFING

The unit will be headed by a health education officer with

supporting staff consist of graphic artists, photographers and clerical personnel.

5.6.2.4 FUNCTION OF SPACES

a) Office of head of department

b) General office

c) Workstation for graphics works

d) Room for the photography /slide-making.

e) Workroom for artist

f) AVA store room

g) Large Store - to store items for exhibitions, health education materials, etc.

1. Slide store
2. Printing room
3. Meeting room
4. Staff rest room with pantry facilities

4.1 Staff toilets (male and female)

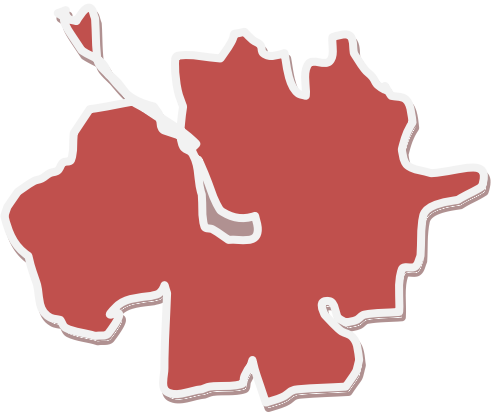
h) Information centre

To be provided at the entrance of the main lobby. The centre will be furnished with health education materials and the public may have access to information through the computer terminals.

i) Exhibition Area

Area for exhibition of health education activities will be provided at the main lobby/entrance of the hospital, the primary health care clinic.

5.7 Administrative Offices



5.7.1 General Administration Department
5.7.2 Academic Office
5.7.3 Admission and Revenue Unit
5.7.4 Registration & Medical Records Department
5.7.5 Information Technology and Hospital Information Services

5.7 ADMINISTRATION OFFICE

5.7.1 GENERAL ADMINISTRATION DEPARTMENT

5.7.1.1 FUNCTIONAL DESCRIPTION

The administration office will be responsible for the following activities:

a) Overall management of the hospital

b) Management of human resource

c) Management of finance, including admissions and revenue collection

d) Training programmes

5.7.1.2 SERVICES PROVIDED

a) **Hospital Policies**

Formulate operational policies of the hospital and monitoring and evaluation of their implementation. This will be done in consultation with, and support from other heads of department. Various committees will be set up to support the management.

b) **Public Relations and Communication with other institutions/agencies.**

The office will handle communication and correspondence with other external agencies except for those issues relating to technical/professional matters.

c) **Human Resource Management**

Overall management of staff e.g. maintenance of staff

records, staff posting and transfers, etc. This office will also be responsible for looking after care of staff welfare, managing the staff accommodation, and coordinating recreational activities.

d) **Financial Management**

Responsible for budget preparation and allocation, use of funds, financial records, auditing, revenue collection, etc.

e) **Continuous Medical Education (CME)**

Coordinate the various CME activities in the hospital and send staff for training to other institutions.

f) **Communication**

IP Telephony services and other related communication services will be managed by the administrative office and IT Department.

5.7.1.3 ORGANISATION

a) Hospital Director/Dean is overall in-charge of hospital management.

b) For day-to-day operations, he/she will be assisted by the deputy directors, chief administrator, hospital managers and all other heads of department/unit.

5.7.1.4 GENERAL LAYOUT

a) The location of the admission room and revenue collection counter should not be near the office proper. The admission/revenue counter is to be located at the lobby of the entrance used by visitors.

b) The office proper should be located away from the main entrance and clinical areas. There should be a reception counter and waiting area for staff, public, and patients in the office proper.

5.7.1.5 OFFICE AUTOMATION AND COMPUTERISATION

In line with the development of IT in other Government hospitals, most of the activities in the Administrative Department will be computerised. Applications such as Financial Management, Human Resource and Material Management will be part of the IT System.

5.7.1.6 COMPONENTS OF ADMINISTRATION OFFICE

a) **Admission Counter**

The process of admissions will be carried out here, located on one side of the entrance lobby. This counter will also function as the enquiry desk for the public. Activities at this counter will be computerised.

b) **Revenue Collection Counter**

(i) It is sited side by side with the admission counter. All payments to the hospitals, i.e. bills and other fees, will be done here. An office and support facilities are to be provided, shared with admission counter.

(ii) Patients who are unable to pay will be referred to medical social workers

c) **Administrative Office**

The main administrative activities will be held in this office.

d) **IP Telephony Services**

The room for the IP - PABX and the telephone operators will be located near the admission room

e) **Condemn Store**

Equipment and furniture which are obsolete or beyond economic repair will be held in the condemn store until clearance is given to dispose of them. The store should be located away from the main traffic lines.

5.7.1.7 FUNCTION OF SPACES

a) **Admission and revenue collection unit**

(i) **Admission/Revenue Counter**

An open counter to be provided for the receptionists. Patients to be admitted or their relatives may be interviewed for details. Information will be entered into the computer (Patient Information System). For patients to be admitted, deposits are collected and receipts issued. For patients to be discharged, computerised bills will be issued in the receptive wards, and payment of bill will be done here.

(ii) **Waiting Area**

A waiting area to accommodate about 50 people at the Public Wing and 30 people at the Private Wing. Provision to be made for a pleasant and conducive environment, and space for wheel chair should be provided.

(iii) **General Office**

1. Behind the admission counter, there will be the office area for the management of admission

counter and hospital billing. The office will be headed by an executive officer and supported by the clerical staffs.

2. Space requirements are as follows:

2.1 Head of Unit.

2.2 General Office for 6 personnel.

2.3 Safe Room.

2.4 File Room.

2.5 Printing Room

2.6 Record Room.

2.7 Meeting Room.

2.8 Staff Rest.

2.9 Staff Toilets (Male and Female).

2.10 General Store.

b) Administrative office

(i) Reception and Waiting Area.

(ii) Single Offices for:

1. Director with receptionist.
2. Deputy Director with Receptionist.
3. Other Executives (8).

(iii) General Office with the following sections:

1. Human Resource Unit.
2. Finance Section.
3. General Administration Section.

Each zone will accommodate about 15-20 personnel.

(iv) Nursing Manager and Matrons with 6 single office, reception and General Office of 10 personnel.

(v) Meeting Rooms:

1. 1 meeting room adjacent to the Director's office, to accommodate 15 people.
2. 1 conference room to accommodate 40 people.
3. Beverage and server area to support the meeting room.

(vi) Other support areas:

1. Library/Archives and Reading Room.
2. Main File Room.
3. Confidential File Room.
4. Printing Room.
5. Photostat Room.
6. Stores - General

   6.1 Stationery
7. Staff Rest and Pantry Facilities.
8. Staff Toilets (Male/ Female).
9. Staff toilets (Male/Female).
10. Pray Room (Male/Female).
11. Cleaner's Room.
12. IT Lab (for training of staff in THIS (20 + 1 terminals)
13. Archive Room

(vii) Condemned Store

Equipment and furniture which are absolute or beyond economic repair will be held in the condemned store until clearance is given to dispose them. The store should be located away from the main traffic lines.

c) IP - PABX

(i) Chief Telephonist Room.

(ii) Telephonist Room.

(iii) IP - PABX Room.

(iv) Staff Rest with Pantry facilities.

(v) Staff toilets.

(vi) Prayer Room

5.7 ADMINISTRATION OFFICE

5.7.2 ACADEMIC OFFICE

5.7.2.1 FUNCTIONAL DESCRIPTION

For academic staff to utilize as administrative activities with centralize facilities and clerical support.

5.7.2.2 OPERATIONALPOLICIES

a) Space provision

(i) Open lounge (40 -60 person at any one time))
(ii) Discussion room (4 rooms 15-20 person capacity)
(iii) Computer/Writing Area
(iv) Staff Toilet (male /female/disable)
(v) Pantry
(vi) Central general office facilities (faxing, photocopy, binding)
(vii) Prayer room (male/female)
(viii) Stores – general
(ix) Filing Rooms

5.7.2.3 WORKLOAD

5.7.2.4 LOCATIONAL FACTORS

5.7.2.5 PLANNING & DESIGN CONCEPTS

5.7.2.6 WORK FLOW AND FUNCTION OF SPACES

5.7.2.7 MANAGEMENT & HUMAN RESOURCES(STAFFING)

5.7.2.8 APPLICATION OF WHOLE HOSPITAL POLICIES

5.7.2.9 ENGINEERING & ENVIRONMENTAL SERVICE REQUIREMENTS

5.7.2.10 SPACE PROVISION

5.7 ADMINSTRATIVE SERVICES

5.7.3 ADMISSION AND REVENUE UNIT

5.7.3.1 Functional Description

a) It is responsible for registering all patients who are admitted.

b) This section will provide information about inpatients with regards to which wards they are admitted to, who are the doctors' in charge and when the patients were discharged.

c) It will also register all births and deaths occurring in the hospital.

d) It provided services of Registration of Admission. Essential details of the patient and spouse/nearest relative are recorded.

e) <u>Collection of Deposits</u>
Deposits/guarantee letters are collected.

f) <u>Information Services</u>
The public can ring up for details on patients' admission.

g) <u>Registration of Hospital Births and Deaths</u>
This section will be responsible for registration of all births and deaths occurring in the hospital.

h) Admission of Patient

(i) Patients to be admitted will be brought by staff of admitting department unless patient presents on appointment.

(ii) Patients are registered and certain details recorded, main ones being the name, age, sex, race, religion, address, occupatio, I.C. No., Hospital Registration No. (if available), class requested for, etc.

(iii) Details of spouse/nearest relative are also recorded.

(iv) Deposits are collected, amounts varying as to the patients' choice of 1st, 2nd or 3rd class. A Guaranteed Letter form an employer, a Pension Card or evidence justifying free treatment (e.g. medical and health staff) will be accepted in line).

(v) Patients are despatched to the wards by attendants of admission section.

i) Handling of Deposits

Receipts are issued immediately and the money is kept in the admission section until 8-9 a.m. for the night shift) or 3-4 p.m. (office hour shift), when the cash is sent to the Administrative Section.

j) Registration of Births and Deaths

(i) The admission section is informed by ward staff when a patient passes away.

(ii) Similarly the Labour/Maternity O.T.will inform Admission of each birth in the hospital.

k) Information Service

Patients relatives can contact the admission section at any time to find out details about patients with regard to dates admission/discharge or death, and which ward was the patient admitted to.

5.7.3.2 Function of Spaces

a) Reception/Admission Counter

A long counter should be provided for 2 receptionists. Patients or their relatives are interviewed for details. Deposits are collected and receipts issued. An admission form is filled in. Public enquiries are also handled here.

b) General Office

Behind the Reception/Admission Counter, will be the area where reports, etc. will be prepared.

c) Stretcher/Wheelchair Park

Space for 3 stretchers/3 wheelchairs required.

d) Waiting Area

An area for 30 people will be adequate. This should be to one side of the Reception/Admission Counter. Space for patients on wheelchairs/stretchers should be provided. Male and female public toilets should be attached.

e) Office of Senior H.A. i/c

For the senior H.A. to perform his administrative duties. It

should be located away from the active areas but a glass panel is required for overseeing both the Reception/Admission Counter and General Office. a build in wall safe is required.

f) Staff Room (with toilet attached)
For the Admission staff to rest and have their coffee/lunch breaks.

g) Records Room/Stationery Store
A small records room/stationery store is necessary only records of admissions and old registers will be kept here with stationery.

5.7.3.3 Relationships with other Departments

a) All cases to be admitted will be referred here for essential formalities prior to admission.

b) Deposits collected on admission will be transferred to the Financial Section of the Hospital Administration.

c) Data on admissions/discharges will be sent to the Hospital Administration for computation of fees, and to the Central Medical Records.

5.7.3.4 Locational Factors

a) This section must be located on the ground floor close by direct circulation to ED but away from main service lines and

visitors and outpatient traffic.

b) It must be easily accessible to Specialist Clinics, ACC.

c) All inpatients wards must be readily accessible from the Admission Section.

d) The Hospital Administration Area and Central Records should be close by.

5.7.3.5 **SPACE PROVISIONS**

5.7 ADMINISTRATIVE SERVICES

5.7.4 MEDICAL RECORDS DEPARTMENT

5.7.4.1 FUNCTIONAL DESCRIPTION

a) The medical records department is responsible for the management of the centralised patient record system. With the development of electronic patient record, this department will work hand in hand with the information system managers. The department's role will be towards analysing the data/information rather than collecting/retrieving the data.

b) Management of ICD classification and the use of ICD for diagnosis will be further emphasized by this department.

c) The department will be responsible for the preparation of medical reports, legal case report, etc. and issuing reports for various requirements.

d) The department will keep normal inpatient records for 7 years and the medico-legal records for 10 years. The information will be kept in active and passive storage.

5.7.4.2 OPERATIONAL POLICIES

a) Patient records

As part of the total hospital information system, the management of patient records should be in line with the information technology policies. However, space for hard copy records (including x-ray films) is still required. Records of medico-legal cases will be kept in the fire-proof secure cabinets.

b) Medical reports

(i) Requests for medical reports are received either through the mail or the clients come personally to the medical records departments.

(ii) Reports are needed for various reasons such as insurance, SOCSO claims, medical board, police cases litigations, overseas treatments, etc. Clients have to fulfil certain requirements such as consent before reports can be handed to them.

(iii) Doctors may prepare medical reports in the medical record department especially the reports for those records which cannot be retrieved from the computer terminals.

5.7.4.3 PLANNING CONCEPT

The medical records department should be adjacent to the computer department.

5.7.4.4 LOCATIONAL FACTORS

a) The medical records department will be located adjacent to the information technology department.

b) It should also be accessible to the public who have to obtain medical reports from the hospital.

5.7.4.5 ORGANISATION

The medical records department will be headed by medical record officer (MRO), assisted by assistant medical record officer (AMRO), clerks and general, and workers.

5.7.4.6 FUNCTION OF SPACES

a) Entrance

(i) Reception counter

Issuing of medical reports will be done here.

(ii) Interview room

Clients will be interviewed by staff in these rooms.

(iii) Waiting area

A waiting area for 12 persons and equipped with digital calling system.

(iv) Public toilets

b) Records Storage

(i) Active records

1. The store for active medical records.
2. The store for active X-ray films.

(ii) Passive records

For the passive medical records which need to be kept for 10 years, a separate storage area needs to be provided. This facility may be located away from the medical records department.

(iii) Medico-legal filing room

The proposed area for this room should be about 30 sq. metres. Records are kept in cabinets.

(iv) Stationery store

The area required is about 12 sq. metres.

c) Office area

(i) Medical records officer's office

Room of head of department with sub-wait open office for the officers.

(ii) General office

To accommodate 3 personnel.

(iii) Doctors' reporting room
To provide space for 3 workstations.

(iv) Printing room

(v) Research room

(vi) To provide space for 3 workstations.

(vii) Coding area

(viii) Sorting area

(ix) Seminar room
To accommodate 12 people.

(x) Staff rest room

(xi) Staff toilet

(xii) Prayer room.

5.7 ADMINISTRATIVE SERVICES

5.7.5 INFORMATION TECHNOLOGY

5.7.5.1 The detailed brief on information technology (IT) will be prepared separately and will specify the requirements of the intergrated hospital information system. The focus is on patient-centred intergrated hospital information system.

5.7.5.2 The proposed system will be designed and equipped with the capability to be "paperless". All image acquisition sources are intrinsically digital and results (image and data) will be communicated and archived in a digital format (PACS).

5.7.5.3 The computer department will be responsible for the management of the hospital information system.

5.7.5.4 PLANNING CONCEPT

The computer department should be adjacent to the medical record office.

5.7.5.5 FUNCTION OF SPACES

For the purpose of identifying the space needed for the department, the following are the indicative space requirements for the computer department:

a) Entrance

(i) Entrance and reception counter
(ii) Waiting area
(iii) Public toilets

b) Office area

(i) IT Manager Room (1)

(ii) Admin IT Manager Room (1)

(iii) Network Engineers Room (3)

(iv) Information System Officer (5)

(v) Assistant Information Officer Common Office-20 persons

(vi) Technician Room (20 persons)

(vii) General office

(viii) Computer training room to accommodate work stations (20 participant + 1 facilitator)

(ix) Seminar/Meeting room (50 person)

c) Staff area

(i) Rest room with pantry facilities

(ii) Staff toilets (Male/Female)

(iii) Prayer room (Male/Female)

d) Support area

(i) EDP file room / Main Server Room)

(ii) Printing room

(iii) Computer room (CPU)

(iv) Cleaner's room

(v) Disposal room

(vi) Stores:

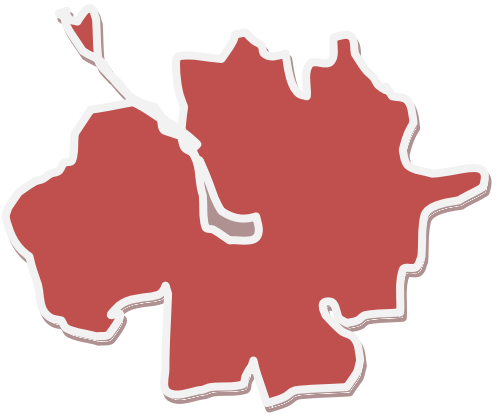
1. Electronic equipment store
2. Storage /jukebox room
3. General store

(vii) Infrastructure

1. server room by floor/zone
2. hub at every 100 m
3. vertical and horizontal truncking

(viii) Maintenance (together with bio medical maintenance Unit)

5.8 Staff and Students' Facilities



5.8.1 Doctors on Call Facilities
5.8.2 Nurses' Hostels (Annez)

5.8 STAFF ON STUDENTS' FACILITIES

5.8.1 ON CALL UNIT

5.8.1.1 FUNCTIONAL DESCRIPTION

This complex is an accommodation for essential staff on call only.

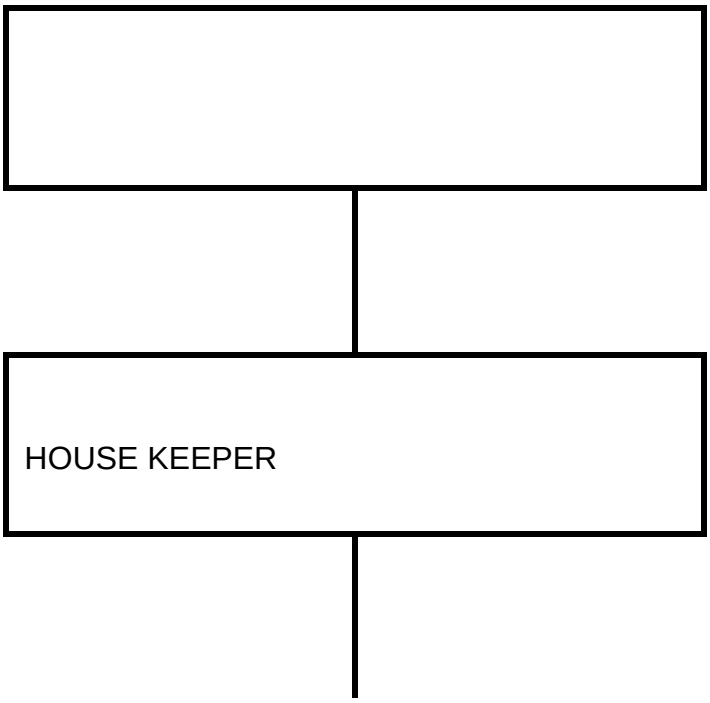
a) The Call Complex has facilities for accommodation and recreation. Doctor's meals are provided from the Hospital Kitchen.

b) Houseman shall have their call rooms within the inpatient areas where dining facilities are provided. Food for Houseman will be provided by the Hospital Kitchen.

5.8.1.2 LOCATION:

The call complex can be away from critical patient areas but easily accessible for Doctors to attend to emergencies when need arises.

5.8.1.3 MANAGEMENT & HUMAN RESOURCE



5.8.1.4 OPERATIONAL PROCEDURES

a) Keys

Staff on call shall take the room keys from the management during office hours. Keys shall be returned immediately one is off call duty.

b) Food Supplies

Meals for Doctors shall be sent to the Call Complex on Food Trollies by dedicated kitchen porter.

Cold food shall be stored in refrigerators. Reheating of food can be done at kitchenette.

c) Supplies From Store

Orders for supplies are made on special formats. Requests are made on schedule dates. Collection/ Receive of supplies shall be in line with whole hospital policy.

d) Linen Supply

Linen supply to the Call Complex shall follow that of the whole Hospital Policy.

e) Waste Disposal

Waste from this complex shall be centrally collected prior to collection by privatised company/ cleaning team.

5.8.1.5 LOCATION

a) The Call Complex shall be air conditioned with control points in bedrooms and lounges.

b) The on call complex will be located at the main block, centrally located and within easy access for on-call purposes.

c) The rooms shall be properly sited to reduce noise for resting staff and those in recreational area.

d) Separated Dining Room and Lounge preferred for easy management at meal times and cleaning.

e) Visitors toilet annex to lounge area.

5.8.1.6 COMPONENTS OF CALL COMPLEX

a) Lobby and Reception

Staff on call shall report and claim room keys at Reception. The keys shall be returned early the following day for the next person reporting. The reception is also a point for security of this complex.

b) Housekeeper's Office

The day to day management of the Call Complex is run by the Housekeeper. She is also incharge of the Housman's Complex. The office space requirement is meant for 2 staff working and 2-3 visitors at any one time.

c) Public Toilet

Male and Female Toilet for Staff and visitors from the dining and lobby area.

d) Call Rooms

These are rooms for single occupancy with wardrobe, 2 lounge chairs, writing table, dressing and toilet attached.

e) Pantry

Food may be heated or kept in refrigerator at the pantry. Bread toasting is done here.

f) General Store for various items.

g) Cleaners Room.

h) Linen Room

Linen arriving from the Laundry are kept neatly on shelves. Linen is changed daily in all occupied rooms.

i) Dirty Linen Holding

Dirty linen are collected daily and held in this room on trollies or bags prior to collection by privatised laundry workers.

j) Disposal Room

collection centre prior to disposal by workers.

5.8.1.7 SPACE PROVISIONS

ROOMS	NO.OF ROOMS	UNIT AREA SQ.M.	TOTAL AREA
1. Lobby & Reception	1	16	16
2. Housekeepers Office	1	12	12
3. Public Toilet M/F	2	6	12
	20	18	360

4. Call Rooms	2	18	36
5. Lounge	2	15	30
6. Pantry	1	25	25
7. Dining Area	2	15	30
8. General Store	3	5	15
9. Cleaners Room	1	8	8
10. Linen Room	1	8	8
11. Dirty Linen Holding	1	5	5
12. Disposal Room			

Refer The "SUGGESTED SCHEDULE OF ACCOMODATION IS AS THE APPENDIX (where relevant).

5.8 STAFF ON STUDENTS' FACILITIES

5.8.2 NURSES HOSTEL

5.8.2.1 FUNCTIONAL DESCRIPTION

a) The Nurses Hostel is an accommodation for nurses at IIUM Hospital.

b) Nurses are likely to be called upon to supplement staff during emergencies and for shift duties

c) They shall be accommodate 100 Nurses, 2 suites for Sister and 1 suite for Housekeeper.

d) The hostel also provides recreational facilities for nursing staff at the hospital

5.8.2.2 OPERATIONAL PROCEDURES

a) Register and Deregister of Occupants

Registration of new occupants, orientation and handling over of room keys and linen is done at House Keeper's office. The occupants on leaving / transfer from the hostel reports and returns the key and linen to the Housekeeper or an assistant.

5.8.2.3 WORKLOAD

a) LOCATIONAL FACTORS

(i) It should be located in non prime area to provide privacy and away from busy traffic of general public.

(ii) The Nurses Hostel shall be located within the Hospital grounds.

(iii) Linked by covered walkway to hospital building.

(iv) Fencing of whole building is required if building is located out of hospital compound.

(v) Street and compound lighting sufficient to provide security and

(vi) Brightness for staff moving on shift duties.

(vii) Bearing of Hostel is East / West Orientation.

(viii) Parking space for nurses is 1 bay per 2 occupants.

(ix) Sister/Housekeeper is 1 bay each

(x) The hostel complex should be linked directly or via covered

(xi) Walkway to the hospital building.

(xii) Security post at gate/building is required at entrance from hospital and visitors entrance.

(xiii) The location of the hostels where nurses will be accommodated should be adjacent to staff entrance of the hospital without passing through service area.

MANAGEMENT & HUMAN RESOURCE

MATRON

| |

HOUSE KEEPER

| |

HOUSE ASSISTANT

5.8.2.4 **APPLICATION OF WHOLE HOSPITAL POLICIES**

a) Supplies from Stores

Orders for supplies are made on special formats. Request are made on schedule dates .Collection / Receive of supplies shall be in line with the whole hospital policy.

b) Linen Supply

Linen services to the hostel shall be privatized.

c) Food Supply

Occupants have their meals at cafeteria in the hospital complex. No mass cooking is done in the hostel .Reheating of food in microwave, preparation of beverages and bread toasting is allowed and provision is made at the pantries on each floor. Only halal food is allowed into this complex.

d) Waste Disposal

Waste from the hostel shall be centrally collected prior to collection by the priva-tised company / cleaning team .

e) Laundry

Occupants shall wash their own clothes at the washing / drying area located on each floor .Space for washing machine and power points provided. Space for ironing for 2 people at a time .Sufficient clothes line for drying shall be provided at each drying area with block off view from outside of building but enough venti-lation to dry clothes.

f) Security

(i) Doors and windows on ground floor /floors of the hostel block/ building/ adjacent to any near-by building to be secured physically.

(ii) Fire exits and escape routes to be clearly identified.

(iii) Individual rooms to be equipped with door guard or equivalent and latch apart from personal keys.

5.8.2.5 **PLANNING AND DESIGN CONCEPTS**

a) A drop off point /porch adjoints the entrance lobby.

b) House keepers office is a point of report / enquiry for new staff and visitors.

c) A common lounge large enough to cater few clusters of sette for nurses to wel-come visitors / relatives.

d) Area for reading, information, notice board, letter box and telephone area public /internal for occupants convenience. An internal telephone line on each floor of Nurses Hostel. Sister shall have a C' line phone each.

e) Cleaner's Room for every floor to maintain day to day cleaning.

f) Lift area to be away from bed room areas to avoid disturbing staff resting for night duty .

g) General stores for miscellaneous items ,

(i) Linen store for clean linen ,

(ii) Dirty linen room for linen to send to Laundry

(iii) Luggage store for staff awaiting transfer / transit

h) Sister's Suite is preferred to be on ground and 1st floor .A similar unit shall be for House Keeper.

i) All bedrooms for single occupancy shall share facilities for pantry, washing ,ironing and common lounge on each floor .

5.8.2.6 **WORKFLOW AND FUNCTION OF SPACES**

a) Description

b) **Workflow**

c) **Function of Spaces**

(i) Driveway Porch Entrance to the Nurses Hostel shall have a welcoming appearance.

(ii) Visitors' Lounge

Open Lounge shall have clusters of settee to entertain visitors and staff relaxation with ample privacy .

(iii) Visitors Toilet

Common toilet for male and female visitors with vanity and mirror.

(iv) Reading Area / Post Office Box

Newspaper reading and relaxation facility.

(v) Hostel Office

Space for 2 people working and 2-3 waiting seats all in the same room .This room overlooks the lounge / lift lobby, It will have office for the Person in Charge//Housekeeper.

(vi) Telephone KIOSK

Public / Internal call ‘c’ line outside office, off main entrance.

(vii) Stores

1. General Stores
2. Linen Stores
3. Clean Linen Stores
4. Dirty Luggage Store

(viii) Sister’s Suite consists of lounge, kitchenette, Bath / WC, Dressing / Writing Area and Bed Area.

(ix) House keeper unit same as Sister’s Suite .

(x) Nurses Room (100 rooms)

(xi) Single occupancy with sitting area, dressing cum writing area, wardrobe, Bath /WC and bed area.

(xii) Common Lounge

Common lounge each floor with facilities like TV / Video player, reading area, computer with internet facilities .

(xiii) Telephone area ‘c’ line for internal calls on every floor.

(xiv) Prayer Room

Common Prayers Room inclusive of Ablution area for occupants and staff work-ing in hostel.

(xv) Pantry

This room shall be provided at each floor. It shall have an area for a refrigerator,worktop for boiling of water and heating up food.

(xvi) Indoor Recreational Area

Facilities for occupant to play indoor games of Table Tennis ,Carrum and a equip-ment store shall be provided.

(xvii) Cleaner's Room

Facilities for cleaning of floors, wall, ceiling and windows for day to day.

(xviii) Disposal Room

Collection of garbage prior to collection by workers

(xix) Kitchen

Space for small group of 3-4 nurses to prepare and cook food. Individual storage cabinets to keep personal belongings. Refrigerator, preparation table and dining facilities for 4 groups of 4 shall be provided.

(xx) Other Area per floor/unit

(xxi) Drying Area

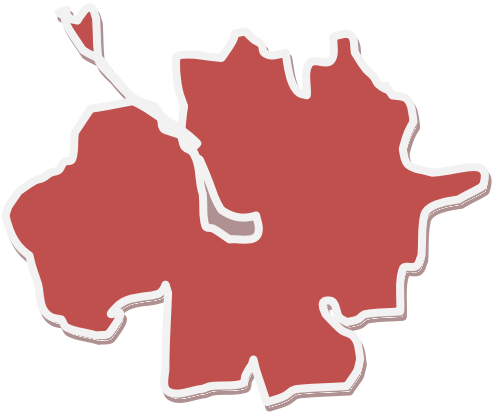
(xxii) Washing Area

(xxiii) Store

(xxiv) Cleaners Room

(xxv) Telephone

5.9 Public Amenities and Recreation



5.9.1 Main Entrances and Hospital Street
5.9.2 Cafeteria (Staff, student and public)
5.9.3 Discharge Lounge

5.9 PUBLIC AMENITIES AND RECREATION

5.9.1 MAIN ENTRANCE AND HOSPITAL STREET

5.9.1.1 FUNCTIONAL DESCRIPTION

a) The main entrance and hallway provided the key focus for persons arriving at the hospital.

b) Its purpose is to provide an easily identified and easily accessible entrance to the wards and main departments of the hospital, and to house those functions best placed at the entry, namely a reception and enquiry counter and admission function.

c) As it is the main public area of the hospital and is the hub of the public circulation, it can also house amenity facilities, e.g. shops, automated tele-machine and public telephones, etc.

d) Health education activities will be done here including exhibition and information centre.

e) The main entrance will not serve the emergency department or labour and delivery unit which, because of the urgent nature of their cases will have direct entrances to them.

5.9.1.2 OPERATIONAL POLICIES

5.9.1.3 WORKLOAD

5.9.1.4 LOCATIONAL FACTORS

5.9.1.5 PLANNING AND DESIGN CONCEPTS

a) Basic principles

It is necessary that a spacious, uncontented, orderly impression is created of patients and their visitors by the entrance hallway. Corporate image of the hospital and its quality service should be selected in the decor.

b) Work flow

Patient will arrive commonly by car, thus the ability to off load the patient into the charge of a porter or attendant and

perhaps have the use of a wheelchair is important.

Staff and visitors will pass through the entrance from the car park to the wards and departments.

Only those making enquiries, attending the admission section, visitors awaiting visiting time, visitors with accompanying children or using the shops and other facilities will remain in the hallway for certain period of time.

5.9.1.6 WORKFLOW AND FUNCTION OF SPACES

a) WORKFLOW

b) **FUNCTION OF SPACES**

(i) Entrance hallway

The hallway is a large activity space. The entrance must clearly evident to visitors and well signposted.

(ii) Public WC

There will be WC's for the public in this space. WC for the disabled (unisex) will be provided.

(iii) Public telephone

Public telephones will be located in the general circulation space.

(iv) Reception/information centre

The reception/information centre shall be easily identifiable on arrival. Information about patients and their location will be held here, general advice and directions can be given. Health education materials and pamphlets will be available here for the public.

(v) Wheelchair / trolley park

A wheelchair/trolley parking bay will be provided within vision of the porters base so that patients can obtain a wheelchair directly from their car at the entrance.

(vi) Porter's base

A porter's base will provide a location for general porters who will undertake a variety of duties including escorting new patients to their destination.

(vii) Security counter

This counter is to be managed by the privatised security service. This counter also functions as visitor's control point where authorisation passes will be issued. An office for security staff and change room and locker is to be provided away from general circulation.

(viii) Other amenities

(ix) A counter for "lost and found" properties will be provided at the admission counter.

(x) Breastfeeding and nappy change room.

(xi) Main waiting area for discharged patients, visitors and relatives

(xii) Children play area for accompanying children of visitors

(xiii) Shops/florists

(xiv) Bank/automated tele-machine/post office

5.9.1.7 **MANAGEMENT & HUMAN RESOURCE (STAFFING**

5.9 PUBLIC AMENITIES AND RECREATION

5.9.2 CAFETERIA

5.9.2.1 FUNCTIONAL DESCRIPTION

To cater for the needs of the staff, patients and visitors. There should be separate areas for staff and public cafeteria.

5.9.2.2 INTERRELATIONSHIP TO HOSPITAL

a) The staff cafeteria is to be located within the main hospital building to accommodate 100 persons at any one time.

b) The public cafeteria is to be located at the Ground Floor of the main· hospital building.

c) Both the staff and public cafeteria should have access for supplies and waste disposal.

5.9.2.3 LOCATION

The space should be in or adjacent to the hospital building with easy access for visitors, services and good views.

5.9 PUBLIC AMENITIES AND RECREATION

5.9.2 DISCHARGE LOUNGE

5.9.2.1 FUNCTIONAL DESCRIPTION

The lounge is to facilitate discharge of patients from various wards for efficient use of bed turnover.

The facility is to be located at the main public circulation adjacent to revenue collection centre and dispensing pharmacy.

The facility should be able to accommodate separate lounges for male and female patients with room for accompanying family members

The lounge should be equipped with beverage, reading and entertainment facilities

5.9.2.2 SERVICES PROVIDED

One stop centre for discharge of patients
Dispensing of medication
Counselling
Payment facilities

5.9.2.3 OPERATIONAL POLICIES

It will operate on 24 hours basis

5.9.2.4 PLANNING AND DESIGN CONCEPTS

Accessible from wards and main hospital streets
Located near vehicle access for collection only
Pleasant surroundings

5.9.2.5 SPACE REQUIREMENTS /PROVISIONS.

a) Lounge

(i) Lounge area for male and female, family
(ii) Beverage area
(iii) Public Phone area
(iv) Prayer room (Male and female/disable friendly)
(v) Toilets (male/female/disable)
(vi) nappy change
(vii) breastfeeding room

b) Pharmacy Dispensing

c) Counseling Unit

d) Payment counter

e) Vehicle collection point

f) Trolley/wheel chair park

Appendices

- Suggested Schedule of Accommodation
- Suggested Layout Sketches
- Site photographs
- Departmental Coding
- Other

References